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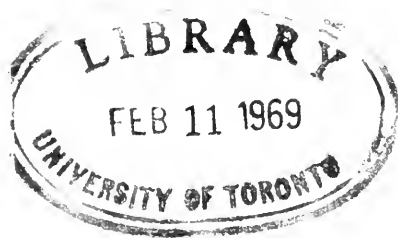
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THE
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Original Articles.

NOTES ON THE RETENTION OF UREA ELIMINATION TO FEVER.

BY PROFESSORS H. C. WOOD AND JNO. MARSHALL,

Of the University of Pennsylvania.

FOR some years we have been much interested in the relations of Fever and Urea, and had hoped to publish an elaborate memoir upon the subject. The growing press of more urgent professional duties seems, however, to render this impossible; but we think we have done enough work to justify the putting upon record our reflections and experimental results, although these are more or less fragmentary.

Every one knows that increase of the bodily temperature in man which is commonly spoken of as "Fever," is especially associated with an increase of the elimination of urea, and probably most physiologists believe that the increase of nitrogenous elimination is the direct result of the fever process. It seems to us, however, not yet definitely decided whether the increase of urea elimination is an integrant part of the fever process, or whether it is an indirect outcome, caused by the action of the excessive heat upon certain organs, or by some of the various disarrangements of the bodily functions produced by fever.

The latter theory gains probability from the experiments of Schleich (*Archiv f. exper. Path. u. Pharma.*, Bd. iv.), and of Naunyn (*Berlin klin. Wochenschr.*, 1869) upon dogs, in which the artificial elevation of the animal temperature was followed by an increase of the eliminated urea: results which agree with those of Bartels (*Greifswalder med. Beiträge*, Bd. iii., 1864), who found that the production of urea was increased nearly four grammes in man by raising the temperature artificially by a vapor bath, but disagree with those of Dr. C. F. A. Koch (*Hoffmann and Schwalbe*, 1885), who was not able to produce any increase of urea elimination by artificially raising the temperature of the animal. Further careful, thorough investigation of the effects of external warmth upon urea elimination seems necessary.

The facts in regard to the relations between urea elimination and bodily temperature which appear to have been established by the concordant results of different experimenters, are:

First. That in fever the increase in the elimination of urea is not necessarily proportionate to the bodily temperature, so that very slight increase of temperature may be associated with great increase in the elimination of urea, or very great increase in the temperature may be associated with very slight increase in the urea elimination, and especially when disease of the liver exists there may be a marked rise of the bodily temperature, with a discharge of urea that is less than the norm. See Ernst Unruh (*Virchow's Archiv*, 1869, Bd. xlviii.); Keith Anderson (*Centralblatt f. d. med. Wissenschaft*, 1866, No. 19); Thomas Oliver (*Brit. Med. Jour.*, 1886, vol. ii.); Paul Lewis (*Paris Thesis*, 1877); R. du Castel (*Paris Thesis*, 1878), in which theses, also, may be found various abstracts of other confirmatory researches.

Second. In the crisis of the fever there is very apt to be an extraordinary elimination of urea, although the temperature may be much below the point which it has reached during the continuation of the fever, when the urea elimination was much less, or even below the normal. As proof of this, we make reference again to the works of Unruh, Keith Anderson, Lewis, Hirtz, Charcot, Gubler and others.

Third. In certain diseases with low temperature, such as cancer, scorbutus, diabetes, gout, rheumatism, and especially various affections of the liver, a low bodily temperature may coexist with a great increase in urea elimination. See Ernst Unruh, Keith Anderson, Paul Lewis.

Especially interesting at this point is the question of urea elimination in cases of hepatic fever, produced by the presence of gall-stones in the gall-bladder or ducts. The first, and the only sufficiently extended study of such a case to be of value with which we are acquainted is that made by Regnard, 1873 (in the *Memoirs Soc. Biologique*, page 339). A number of cases have been published, especially by Prof. William Pepper, in which it has been found that high hepatic fever may co-exist with a small elimination of urea, but in these cases the urea elimination in the non-febrile days has not been sufficiently examined to make the records valuable for our present purpose, that is, for the determination whether fever in these cases does or does not increase urea elimination; for it may well be that the discharge of urea is in these cases habitually so far below the norm that in fever days it fails to reach the norm, although there is an increase in the output of the urea as contrasted with that of the non-febrile day. The study by Regnard seems to have been a very complete one; and he further states that although it was impossible to determine the exact quantity of nitrogen taken each day by the patient, the same regimen was enforced in the febrile and non-febrile days, and there was no notable difference in the amount of nitrogen taken. Regnard's results are tabulated by him as follows:

	1	2	3	4	5	6	7	8	9
Temperature...	37.4°	(40.8°)	(38.6°)	37.4°	36.8°	(39°)	36.6°	37.6°	(39°)
Urea....	14	(4)	(9)	11	14	(4)	15	12	(7)

	10	11	12	13	14	15	16	17	18
Temperature...	37°	36.8°	(40.4°)	36.8°	(40.5°)	37.5°	(39.8°)	36.8°	(40.6°)
Urea....	13	15	(9)	12	(7)	16	(12)	18	(7)

The dates are in August. The fever days in parenthesis. Average temperature given every day.

We have had an opportunity for making a study of the urea elimination in one very severe protracted case of hepatic fever, with nearly or altogether complete closure of the common duct. The patient was a man about sixty years old, who had suffered from repeated attacks of gall-stones. The diet at the time during which the study was made, was almost exclusively milk, and was nearly uniform, a little less nitrogen being taken on the febrile than on the non-febrile days. We place the results which we have reached, in the form of tables, in which F. D. stands for febrile day, and N. D. for normal day, the minimum and maximum temperature of each day being given, with the amount of urine passed in c. c.; followed by the amount of urea:

N. D.	F. D.	N. D.	F. D.
97.°	103.°	98.°	98.°
99.5°	98.5°	99.°	103.2°
<hr/>	<hr/>	<hr/>	<hr/>
1370 c. c.	1295 c. c.	800 c. c.	1687 c. c.
11.09 grms.	12.82 grms.	7.71 grms.	13.17 grms.

A glance at these experiments show that there was much irregularity of the temperature of the patient, even upon those days which we term "normal." This irregularity was present for some weeks, or even months, in the case. The days which we term "normal" were as near a normal day as could well be obtained, but were always the twenty-four hours following an attack of fever. The results certainly indicate that in hepatic fever, although the total elimination of urea is less than the average passed, it is more than that eliminated on non-febrile days by the same patient upon the same diet.

In order to show still more clearly the relation between temperature and urea elimination, we took five consecutive periods of twelve hours, shown in the accompanying tables. In the first column the maximum and minimum temperatures are given; in the second, the average temperature for the twelve hours:

12 HOUR PERIODS.

1.	99.8° 100.8°	100.1°	}	.....	6.66 grms.	Urea.
2.	98.° 99.°	98.6°	}	.....	3.65 grms	Urea.
3.	98.° 98.5°	98.3°	}	.....	4.06 grms.	Urea.
4.	99.2° 103.2°	101.3°	}	.....	7.02 grms.	Urea.
5.	98.° 99.2°	98.6°	}	.....	6.15 grms	Urea.

The results which we have reached in this way are, upon the whole, concordant with the idea that even in hepatic fever a distinct rise of temperature is usually accompanied with an increase of the elimination of urea.

There is a very natural tendency to use the facts which have thus been demonstrated by the joint labors of clinicians and chemists as to the relations between temperature and urea as the basis upon which theories can be constructed concerning the relations between fever and nitrogenous waste in elimination. There is, however, one very important fallacy which must be guarded against, namely, the tendency to consider temperature as a measure of fever. Of course, if the term "fever" be simply used to express bodily heat, temperature and bodily temperature are synonymous; but if the term "fever" is used as it ought to be, as the name of the nutritive process whose outcome is so often elevated temperature, it is certain the two are not synonymous; for the nutritive process may be in a state of continuous activity at a time when the bodily temperature is below the norm.

The calorimetrical experiments made many years ago by Dr. H. C. Wood, if they proved nothing more, certainly proved that in any case of fever the temperature of the body at a given time is no indication of the activity of the

nutritive disturbance, *i. e.*, of heat production at that time. If increase of the urea elimination be, in fact, an inevitable factor of the fever process, it is the result of increased heat production, and is not directly connected with the increase of temperature. It is evident that for further progress there is needed at present, most urgently, careful calorimetical studies in which the comparison is made between heat production and urea elimination.

A fact which was especially noteworthy in Dr. Wood's early calorimetical studies was, that often in advanced stages of fever, when the bodily temperature was rapidly falling, and was even much below the norm, heat production was extraordinarily active, and it is extremely probable that in the crisis of a human fever, the heat production reaches far cut beyond where it has been during the continuance of the disease, although the temperature may be near to or even below the norm. If this be true, it is readily to be seen why, in the crisis of a fever, urea elimination should be increased.

The experiments of Huppert and Riesell (*Archiv der Heilkunde*, 1869, Bd. 10) seem to show, chemically, that the urea of fever is chiefly the result of the destruction of bodily albumen; coinciding with the views reached by Dr. Wood in calorimetical studies, that there are two distinct sources of bodily heat: one the stored tissues of the body, the other the food stuffs taken into the body; and it is probable that in the crisis of a fever there is a rapid wasting of bodily albumen.

If these probabilities be correct, it is easy to see that the urea discharge in any case of fever, and not the temperature, is the real index to the activity of the nutritive disturbance, so that its study may be of the greatest importance in the treatment and prognosis of a case.

A very important question, for which there has hitherto been no answer at all, is, as to whether intense fever, with great increase of the heat production, can exist without corresponding increase of urea elimination. We have made experiments, which appear to answer this question in the affirmative, and in consequence, to suggest the further

question, whether there is not under such circumstances some chemical destruction of nitrogenous material entirely beyond the ken of modern science. These experiments we made by allowing the dog to go without food for twenty-four hours, so as to reduce the food urea to the least possible point; then for twelve hours, measuring the urea elimination; then dividing the medulla at its junction with the pons in such a way as to avoid injury to the vaso-motor centres; and then, when fever developed itself, measuring the urea elimination. It will be remembered that it was proven by Dr. Wood formerly that this intense, brief fever is accompanied by a most extraordinary increased production of animal heat. The successful experiments were two in number.

EXPERIMENT NO. I.—LARGE RED AND WHITE SETTER.

Section at 3.30 P. M., followed by immediate arrest of respiration, but after ten or fifteen minutes of artificial respiration (by simply compressing of the chest), very deep, slow, regular respiration came on.

TIME.	REC. TEMP.	
3.55.....	103.7	Paralysis complete.
4.00.....	103.9	
4.37.....	104.2	
4.45.....	103.9	
5.00.....	104.	
5.37.....	105.3	
6.35.....	105.8	Cheyne Stokes.
7.35.....	108.3	
8.05.....	108.	Breathing fast.
8.30.....	107.	
9.00.....	106.4	Breathing very fast, nearly regular.
10.35.....	106.4	Respiration 60 per minute.
10.55.....	106.	
11.37.....	105.4	

11.45 P. M. Animal killed; autopsy immediate; no meningeal or other clot of any considerable size in the brain. The knife had passed through the cerebellum and

had also wounded the extreme posterior edge of the left cerebral hemisphere, striking the pons at its junction with the medulla; it had cut entirely through on the right side. In the centre a film of fibres about a half line in thickness, on the extreme inferior or anterior portion of the pons was, left uncut. In the extreme left edge of the nerve mass a portion about a line in width was left uncut through the whole thickness of the pons and medulla.

EXPERIMENT NO. 2.—LARGE CUR.

Section at 5.55 P. M., followed by immediate intense rigidity of the whole body, without arrest of respiration. In a few minutes the rigidity was replaced by absolute paralysis, the breathing becoming very deep and regular.

TIME.	REC. TEMP.
6.00.....	102.4
6.30	104.2
6.50	104.8
7.45	107.
8.10	105.8
8.35	108.7
9.05.....	110.3

At the time of the taking of the last temperature the animal was breathing very well and regularly, appearing as though it would live for many hours. Dr. Wood was now called out of the building, leaving the dog in care of a servant. On his return at 10.15 there was marked post-mortem rigidity of the whole animal, and the rectal temperature was 109°. According to the report of the servant, death occurred suddenly. It was probably caused by paralysis of the respiratory centre by heat; so that the animal may be said to have died of a thermic fever or sunstroke produced by nerve section.

Autopsy.—At the base of the brain some small scattered, rather thin meningeal clots. The section was through the middle portion of the pons; the knife had passed so as to wound the extreme anterior portion of the cerebellum, and had divided the pons in its middle region almost entirely

through, leaving, however, everywhere on the lower aspect a thin layer of fibres half a line in thickness, and at each extreme edge a thicker band.

The experiments for urea, as made by Dr. John Marshall, were as follows :

	UREA.	PERIOD.
White Dog. { Before	10.482	12 hours.
{ After.....	0.964	8.50 "

Cord cut at pons, Tuesday, 3 P. M. Dog died, Tuesday, 11.30 P. M.

	UREA.	PERIOD.
Black Dog. { Before	8.345	12 hours.
{ After	2.107	6.5 "

Cord cut at pons, Tuesday, 3 P. M. Dog died, Tuesday, 9.30 P. M.

The blood of each dog was examined after the section, but no urea could be detected in it.

We have made a series of experiments upon the excretion of urea, after section of the spinal cord, high up. The experiments were all conducted in the same manner. The dog was fed heavily the evening of one day. From twenty-two to twenty-four hours afterward the bladder was emptied by catheter, and the urine carefully collected for the ensuing twenty-four hours, during which time no food at all was allowed the dog. After this first collection, the dog was fed all he would take. Twenty-two hours subsequent to this the operation was performed upon the spinal cord, and the urine collected for twenty-four hours, as before. One point which should have been attended to was not, namely, the weight of the dog was not given.

The temperatures given in the table are rectal temperatures, taken at the close of the twenty-four hours after section of the cord.

The results obtained are so discordant that we can only conclude from them that section of the cord has no direct constant effect upon the secretion of urea, although by shock, interference of the abdominal circulation, etc., it probably greatly influences such secretion, the result being a varying one, according as the indirect consequences of the operation vary.

		Quantity of urea in grammes.	Volume of urine in c. c.	REMARKS.
Black Dog.	Before	243.	20.339	Cord cut Tuesday, between 7th and 8th vertebræ, 4 P. M. Temp., Wednesday, 12 M., 88.2° F., and at 4 P. M., Wednesday, 88° F.
	After	155.	11.163	
Pup.	Before	92.	7.749	Cord cut Tuesday, between 7th and 8th vertebræ, 4 P. M. Temp., Wednesday, 12 M., 96.8°, and at 4 P. M., Wednesday, 94 7°.
	After	115.	8 178	
White Dog.	Before	240.	6.612	Cord cut Tuesday, between 6th and 7th vertebræ, at 4 P. M. Temp., Wednesday, 4 P. M., 88°
	After	14.7	0.852	
Brown Dog.	Before	325.	2.782	Cord cut Tuesday, between 8th and 9th vertebræ, at 4 P. M. Temp., Wednesday, 4 P. M., 101.4°.
	After	54.	1.923	
Black and White Dog.	Before	210.	10.539	Cord cut Tuesday, between 8th and 9th vertebræ, at 4 P. M. Temp., Wednesday, 4 P. M., 89°.
	After	350.	25.296	
Black Dog.	Before	505.	12.555	Cord cut Tuesday, between 10th and 11th verte- bræ, at 4 P. M. Temp., Wednesday, 4 P. M., 97°.
	After	330.	19.739	

HYSTERICAL APHONIA.

Dr. Clemens, in the "Therapeutische Monatshefte," reports the cure of a case of hysterical aphonia by galvanization of the muscular nerves of the accessorius. B. M.

THE SURGICAL TREATMENT OF INSANITY.

In the "Internationale klinische Rundschau," Dr. Burkhardt contributes an article on cortical excision in the treatment of psychoses. He reports the results of operation in five cases. Four of the patients in various stages of dementia were much improved mentally by having a portion of the cortex of their left frontal convolutions removed. In the fifth case, which was one of delusional insanity, the greater part of the cortex of the left temporal convolution was removed, word deafness following the operation. The author thought the bad result in this case due to the fact that the same amount of care was not taken in the technique of the operation as in the other cases. B. M.

SYPHILIS OF THE NERVOUS SYSTEM.¹

By E. D. FISHER, M.D.,

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THE importance of this subject cannot be overrated, especially as all the parts of the nervous system are subject to its influence—the brain and its meninges, the cord, the nerves of special sense and the motor and sensory peripheral nerves. Syphilis of the brain is more frequent than of the other parts of the nervous system, the spinal cord being usually secondarily affected, although in many cases primarily, and the same may be said of the peripheral nerves, with the same reservation that here again we may have a primary affection. In a paper on “Cerebral Syphilis,” read before the section on practice of the Academy of Medicine, December 18, 1888, I divided syphilitic disease of the brain into three classes, as laid down by Rumpf in his admirable and exhaustive work on “Syphilis of the Nervous System,” viz., those involving the cranial bones, the brain and its meninges, and the cerebral vessels. This division will apply equally well to the spinal cord—syphilitic disease of the vertebral column being, however, much rarer than that of the cranial bones. Oppenheim, in a recent article in the “*Berliner klinische Wochenschrift*,” Nos. 48 and 49, 1889, states that in cerebral syphilis, in the majority of cases, the meninges are involved, and that the base is more often affected than the convexity. We have then a meningitis diffusa basilaris syphilitica. Post-mortem it gives the appearance of a mass of paraffine, involving the intra-peduncular space, Sylvian fissures, optic chiasm and the cranial nerves.

Connective-tissue growths extend into the cortex; but in this situation it is not of so much importance as in other

¹ Read before the Clinical Society of the New York Post-Graduate School and Hospital.

regions, as, for example, the motor areas; the cranial nerves appear gray and swollen, from the infiltration of the new growth into the nerve sheath and later into the nerve fibres. This is especially frequent in the optic and third nerves.

The arteries are always affected, the adventitia being infiltrated by round cells from the meninges. The intima becomes thickened, and obliteration of the vessels occurs, either by consequent narrowing of the lumen or by thrombosis. Softening and hemorrhages into the brain substance often occur, more often due to endarteritis. In disease of the vessels, independent of meningitis, which very often occurs, the granulation-tissue growth may originate in the intima or media.

The pathology of syphilis of the cord is similar to that just given of the cerebrum. Jürgensen believes it to be almost always secondary—that is, that we have a descending lesion, a cerebro-spinal meningitis. We find usually a diffuse meningitis, although not infrequently a circumscribed form, resembling then, in its symptomatology, a tumor or gumma. Cell infiltration takes place into the cord after following the course of the arteries, so that in many cases it would appear as if the initial lesion was in the neuroglia, with secondary involvement of the nerve tracts. Adamkiewicz, at least, maintains this theory in reference to the primary affection in *tabes dorsalis*, which is so often specific in origin.

Oppenheim regards cerebro-spinal meningitis syphilitica diffusa as one of the most frequent diseases of the nervous system. In the cord, also, we may have endarteritis independent of meningeal affections. The nerves, as we have said, both cranial and spinal, are very often secondarily involved, but not seldom, and especial, is this so of the oculo-motorius, optic and the trigeminus, and less often of the spinal nerves are they primarily affected, resulting in nutritional changes or neuritis.

We see, from what has been said, that no part of the nervous system escapes from the influence of this all-embracing disease, and in fact the diagnostic point of the

disease is its universality and multiplicity of symptoms, marked by disappearance and reappearance in the various stages.

The symptoms of cerebral syphilis are: cephalalgia, which, unless we have a gumma or disease of the bone, is very frequently not localized, but more generally increasing after midnight, arousing the patient from sleep by its intensity; the pain at times extends from ear to ear, like a band over the vertex. Psychical disturbance is often very marked, taking the form of excitement, mania or confusion. Many such cases find their way to asylums. A case of this nature came under my observation, whose history may illustrate it: M., aged forty, traveling agent, was missed by his friends while on a business trip, and was found wandering, in an aimless way, in Chicago; seemed confused and at times delirious; patient was taken home, and two weeks later was placed in an asylum, where his mental condition improved under the iodides. Patient declared he remembered nothing of what had occurred previous to his being placed in the hospital. Ptosis and diplopia developed, the latter disappearing, followed, however, by optic atrophy; later still, spinal symptoms developed, with myelitis, vesical and rectal paralysis and bed-sores. The diagnosis of cerebro-spinal meningitis syphilitica was evident. The history of case showed many periods of improvement, but always a relapse, and finally a steady progress of the disease, despite the most energetic treatment.

Somnolence, very extreme in character—lasting hours, or even days—is not uncommon; and such a condition, associated with intellectual disturbance, loss of memory, apathy and any affection of the third or optic nerves, might be considered almost diagnostic of syphilis.

Syphilis as a cause of general paresis has been much debated in recent literature. There is no doubt that a larger percentage of cases of general paresis give a history of syphilis than the other forms of insanity.

The disease is most often located in the arteries. The morbid anatomy bears a close relation to that of gen-

eral paralysis non-syphilitica. We find pachymeningitis simple and hemorrhagic, thickening of the walls of the blood-vessels, atrophy of the cortex cells and association fibres. The physical signs of the disease are also similar: tremor of the muscles of the face and tongue, difficulty of articulation, inequality of the pupils, ataxia or lateral sclerosis, etc. But often the mental aspect is very different, in many cases ideas of grandeur and self-sufficiency being absent—in other words, we have general paresis, minus the mental symptoms. I had an opportunity last summer, in the Hospital for Paralytics and Epileptics in London, to see many such cases where there was a history of syphilis, with or without alcoholism or the latter alone. The prognosis also is different. We ascribe two or three years as the course of general paralysis, and always give a fatal prognosis, so that I am inclined to think that cases going on for many years, or indeed recovering more or less completely, are due to syphilis.

At times earlier, or again later than the symptoms already detailed, we may have the cranial nerves affected, and, as we have said, especially the oculo-motor and optic as well as the fifth, seventh and eighth, much more rarely the olfactory.

Ptosis, diplopia, inequality of the pupils, with no history of traumatism, orbital tumor or extraordinary over-use of the eyes, in the great majority of cases, indicates cerebral syphilis. We may have one or all the external muscles involved; the internal rectus is, however, especially prone to this affection—optic neuritis and choked disc, or primary atrophy of the optic nerve, as papillitis syphilitica and retro-bulbar neuritis. The lesion lies in the vessels. The nutrition of the nerves by this infiltration of cells becomes sooner or later affected. The ophthalmoscope reveals the arteries thickened and widened and their lumens narrowed, while the veins are enlarged and distorted, the papilla appearing indistinct and swollen. This is probably always secondary to disease of the vessels in the brain.

Extension of the basal meningitis may involve the

chiasma or tractus opticus, causing neuritis or atrophy and hemianopsia. These conditions, however, may follow from other causes, and are not alone diagnostic of syphilis.

Hemiplegia and monoplegias, aphasia, motor and sensory, characterized, as we have said, by their disappearance and return, are due usually to arterial disease, resulting in thrombosis or hemorrhage. The same laws as to prognosis are effective here as with hemorrhage and endarteritis and thrombosis from other diseases.

Syphilitic disease of the vertebræ is comparatively rare, and, as the dura does not form its periosteum, slight disease can progress without involving the cord. Exostosis may cause compression of the cord.

Disease of the meninges is much more frequent, and is more often diffused than circumscribed, and indeed in the latter it would be almost impossible to differentiate clinically between it and any new growth or tumor.

The symptoms are divisible into those affecting the meninges, the cord itself, and finally the motor and sensory nerve roots.

We find usually, then, some rigidity or stiffness of the back, shooting pains in the direction of the sensory nerve roots, boring, severe pain at the seat of the lesion, paræsthesia and widespread sensory disturbance, and, if the cord is affected, paralysis, motor and sensory, partial or complete, according to the tracts of the cord affected.

The cord itself may be involved independently of the meninges, probably the infiltration in this case following the arteries, as has been said, and involving the neuroglia primarily, later causing by pressure atrophy of nerve cells or fibres. Thus we may have the various forms of atrophy from disease of the anterior horns, myelitis, or again various systemic diseases, locomotor ataxia, lateral sclerosis, etc. The meningeal lesions would differentiate themselves by the neuralgias in the areas of distribution of the sensory roots and the skin affection, atrophy, even though at the same time atrophy of the muscles was present from the lesion affecting the motor nerve roots. A strong proof of syphilis of the cord would be any accompanying cranial

nerve affections or history of previous cerebral symptoms, as often ocular paralysis or other cranial nerve affection precede by years the locomotor ataxia or general paresis.

A case now under my observation would seem to be one of specific meningitis, involving the cord and showing also at present disease of the vertebra, probably secondary to the meningitis.

H., aged about forty-five, has always enjoyed good health up to present illness, which began last fall. I saw patient for first time in October, 1889. Patient complained of pain in lumbar region, shooting pains in legs, some numbness in lower extremities, sense of band around the body at umbilicus and intercostal neuralgia of the left side. Examination showed: Dizziness (slight) on standing with eyes closed, gait ataxic, reflexes exaggerated, parasthesia, some vesical weakness, no wasting of muscles. Diagnosis: Combined sclerosis at that time. Under large doses of iodides patient improved very much; neuralgia about disappeared.

About two months later, on entering his house, found himself unable to walk, and had to be carried into the house. It was found that he could not raise his leg from the bed; no atrophy, parasthesia, reflexes still exaggerated; patient subject to sudden seizures of marked rigidity quite painful in character, also to startings or jerkings of the limbs; pain in back, and girdle sensation about the same. Catheter had at first to be used, but not for a long time.

Patient continued the same, with little or no improvement, until two months later, when caries of the vertebræ was indicated by a marked deformity. The probable result will now be all the symptoms of compression myelitis. That we have had, however, a meningitis, with affection of the posterior and lateral columns, irritation of the sensory nerves, with the resulting intercostal neuralgia, there does not seem to be any doubt.

Before closing this paper I would briefly refer to specific affection of the peripheral nerves, either by extension from some syphilitic lymph gland or from specific infiltration of the nerve itself. The changes in the nerve follow the same

course as from other lesions, except that as the tendency of all syphilitic infiltration is toward retrogression without suppuration, the nerve may not be completely destroyed, but may regain, in part or in whole, its function. We have then the various nerve affections, neuralgias and sensory and motor paralyses.

Neuralgia may come on at the very onset of the infection, but is usually one of the symptoms of the tertiary stage. The supra-orbital and sciatic nerves are very often affected according to Fournier. An affection of the fifth, unless secondary to brain lesion, is rare, although Hughlings Jackson has reported some cases. Cervical and brachial plexus neuralgias are not frequent, nor those of the lumbar plexus.

The nerves of special sense have already been referred to. The olfactory is rarely affected. The auditory nerve, in hereditary syphilis, may later in the disease become affected.

The motor nerves may be separately affected. It is needless to speak further of the third nerve; the seventh is also rarely primarily affected; the spinal nerves may also be affected. The prognosis in peripheral paralysis is a favorable one.

Hereditary syphilis presents the same lesions found in the acquired disease of the cerebral vessels, with hemorrhage, pachymeningitis hemorrhagica and cranial nerve affections.

The spinal cord seems less often affected, although some cases of tabes have been observed. Infantile spastic hemiplegia, with epilepsy and imbecility, initiated by convulsions, is not rare. The appearance of symptoms is sometimes very late, even up to the sixteenth year. Hutchinson, Fournier and others report a number of such cases. Treatment should be carried out systematically and persistently: the inunction method for four or five weeks, to be followed by the iodides for the same time—this treatment, at least the iodides, to be continued for several years. The benefit in many cases of disease of the vessels can be ocularly demonstrated by the ophthalmoscope, when the retinal

vessels can be seen to regain their normal state, the thickening of the walls becoming lessened and the lumen being restored. This probably occurs in the cerebral vessels. Wherever we have the cell infiltration peculiar to syphilis, there is hope of causing its absorption or removal; but naturally, when the symptoms are the result of other changes, induced perhaps by the new growth, the results will not be favorable.

A CASE OF DOUBLE PERIPHERAL FACIAL PARALYSIS.

Martin Krüger (*Neurol. Centralbl.*, July 1, 1890) reports a new case of double facial paralysis which was seen in the clinic of Professor Mendel. A workman, 45 years old, had been employed for several years in a laundry, where he was obliged to work ten hours daily in moist air and wet clothes; he was accustomed to drink brandy and beer freely. In September, 1889, he felt drawing pains first in the left cheek, later in the right; then followed tinnitus aurium, constant secretion of tears, inability to close the eyes, sensitiveness to noises, burning in the mouth, dryness of the throat, and disfigurement of the face, which became stiff and immovable like a mask. The naso-labial fold was obliterated on both sides, the corners of the mouth drawn down, the lower eyelids drooped. The effort to wrinkle the forehead resulted only in two horizontal lines. There was also lagophthalmus, difficulty in chewing and drinking, metallic taste in the mouth; at the same time sensation was everywhere normal. The speech sounded inarticulate, difficult and spluttering, had a nasal tone (through paresis of the palatal muscles), and was accompanied with hissing sounds. Taste was affected only on the anterior two-thirds of the tongue.

From the above symptoms the case was one of peripheral double facial paralysis, with the lesion located within the fallopian canal, probably just above the great superficial petrosal nerve or in the geniculate ganglion itself. Electrical examination gave the reactions of partial degeneration, especially marked in the upper branch of the nerve. For this reason and because of the probable rheumatic origin, the prognosis was rather favorable. Under labile treatment with the negative pole the paralysis was greatly improved.

J. W. B.

AURAL VERTIGO (MENIÈRE'S DISEASE?)¹

L. HARRISON METTLER, A.M., M.D.

MR. PRESIDENT AND MEMBERS: My purpose in presenting this case to you to-night is to discuss briefly the nature of vertigo and the particular form of it known as Menière's Disease, and to show that the name Aural Vertigo is a misleading one, inasmuch as the aural symptoms are not necessarily indicative of trouble in the ear.

CASE.—Mrs. E. M., forty-five years of age, a German, originally of Berlin, now of this city, first came to me March 24, 1890, on account of excessive vertigo and deafness in the left ear. Inquiry elicited nothing of special import in connection with the patient's family history. Of a strong and healthful physique, she had never known any sickness save an attack of scarlet fever in childhood, and a carbuncle which was removed from the back of the neck in 1869. Her husband being a sea captain, she accompanied him on his voyages from 1869 to 1876. He has never had any illness except rheumatism, malaria and dyspepsia. Patient has never given birth to any children, but had two miscarriages while at sea. In 1876, while in New York, she was confined to her bed three months with a severe attack of acute rheumatism. Her physician then told her she also had "dropsy of the heart." At the end of the three months she returned to Philadelphia, and was immediately stricken down with another attack of rheumatism, which lasted two months. About the same time she began to be troubled with severe attacks of asthma. From that time on she enjoyed comparatively good health, being troubled only with slight rheumatic pains, palpitation of the heart and asthma. She had always been a hearty eater. One evening two weeks before she came to me, she ate heartily of oysters and drank freely of beer. She retired for the night and slept well for about two hours. Then she was suddenly awakened with a horrible nausea and distress in the stomach. With this there was an intolerable vertigo, but on account of her general wretched feeling at the time, the patient remembers

¹ Read before the Philadelphia Neurological Society, Nov. 24, 1890.

nothing of the character of this vertigo. Violent vomiting of "a green, bilious matter" then came on, and seemed to repeat itself every fifteen minutes. During all this time the patient was never for a moment unconscious, though she screamed with the agony, frontal headache and violent dizziness. In the morning the vomiting still continued and when she attempted to get up she was so dizzy that her husband had to catch her to save her from falling to the floor. She seems to have had both the subjective and objective varieties of vertigo, for she says objects were swimming in all directions and she felt as though she herself were spinning round like a top. There was no defect in the eyesight, and only a slight frontal headache. It was now that she noticed, for the first time, loss of hearing in the left ear. She says she thought it was complete. There was also marked tinnitus, which she describes as one "pounding on metal," alternating with the peculiar noise made by a "group of birds in the grass." At this time the vertigo was like that which is felt in seasickness; it was irregular and of the swaying and balancing variety. The vomiting continued for three days with more or less fever, flushings, sickness and general distress.

Two weeks later, when I first saw her, the vertigo was still so great that a companion had to accompany her to keep her from falling. There was no more vomiting or fever. From the right ear my watch, a soft-ticking one, could be distinctly heard at a distance of nine inches. In the left ear the power of hearing was totally gone. The sound of the tuning-fork placed against the side and top of the head, as well as at the teeth, was always referred to the right ear. An otoscopic examination revealed nothing abnormal. There was no tinnitus at this time. The vertiginous sensation caused objects to rotate from left to right, and the subjective vertigo was not so marked as it seems to have been at first. Patient thought the eyesight of the left eye was impaired, but examination revealed no marked abnormality; a sensation of twitching about this eye seems to have been rather subjective than real. Examination of the heart exposed the effects of a previous severe attack of endocarditis. The pulse was rapid, irregular and tumultuous. There was marked insufficiency of the mitral valve as shown by the loud systolic murmur. Dyspnœa, præcordial distress, cough and mental anxiety were also among the cardiac symptoms. Suspecting embolism of the auditory artery of the left side, I placed the patient on ten grains of the iodide of potash three times a day.

On March 26 the report was "great improvement." The vertigo had entirely disappeared and the patient felt stronger in every way. The loss of hearing, however, remained the same. A week or two later two grains of quinine, every two hours, were given for one week. This was an experimental trial of Charcot's recommendation of quinine in Menière's disease. April 24th patient saw no improvement in the hearing, but said she felt much worse and that the asthmatic attacks were more troublesome while she was taking the quinine. She then returned to the potassium iodide, which she has taken in doses sometimes of ten, sometimes of fifteen grains, alternately with periods of complete rest, and some sedative for the cough, up to about a month ago. About the middle of May she experienced considerable roaring and crackling in the affected ear, but no increase in the power of hearing. This diminished slightly and was at times replaced by a peculiar "sticking, itchy" sensation in the ear. In July the tinnitus was of a buzzing character, and now when there is loud talking in the room patient says she hears the confused noise as of "birds in the grass." During all this time, however, there has never once been any distinct return of the hearing. Aside from this one difficulty the patient is as well as she was before the night when the vomiting, vertigo and loss of hearing came on.

At my request, Dr. Charles S. Turnbull kindly examined the patient on November 8. The following opinion is copied from a letter which he wrote me on November 10:

"Mrs. M—— came to see me on Saturday. . . . I found total left-sided deafness, due, no doubt, to embolism of the internal auditory artery. The examination of the auditory apparatus proved negative in its results. The membrana tympani, tympanum and eustachian tube I found normal, as also the functions of the middle ear and its appendages; *i. e.*, the air in the tympanum was renewed with each act of deglutition and 'Valsalva' showed air to enter the tympanal cavity and from inward move the membrana tympani outward.

"Loss of hearing was *absolute*, as tested by the tuning-fork, and no apparent symptom of auditory power remained save the tinnitus aurium.

"Tinnitus was of the high-pitched variety and indicated pressure. Doubtless the infarction was so complete as to induce total deafness; nevertheless there was enough of a leakage, or it might be anastomotic action, to permit of a

certain amount of pressure action on this nerve (auditory) that we could notice its effect; similar in action to the cloud-like coruscations noticed by the blind in their sightless eyes.

"I am under the impression that the lung trouble induced the heart's action, or, better, malaction, and a clot was driven to this remote auditory region."

The general condition of the patient, the suddenness of the attack, the unilateral character of the affection, the limited nature of the symptoms, the gradual and permanent amelioration of the vertigo, the total loss of hearing and the absence of more positive bulbar and aural signs, long ago inclined me to this opinion, in which I have been confirmed by Dr. Turnbull.

Before the invention of the ophthalmoscope nearly all forms of blindness, whatever their cause, were known as amaurosis. Otology is much in the same position to-day that ophthalmology was then, and all forms of vertigo associated with auditory symptoms are spoken of as aural vertigo, though in many of the cases the ear trouble seems to be quite independent of, or at most only coincident with the vertiginous symptoms. The confusion is doubtless due to our ignorance of the exact nature of vertigo. The study of this phenomenon is one of the most intricate in medicine, and though we are quite familiar with its objective and subjective manifestations, its immediate cause is as much a mystery as ever. The maintenance of equilibrium has been assigned to a special centre, located nobody knows where. It has been thought that the cerebellum somehow controls, through its co-ordinating function, the equilibrium of the body. A disturbance of the customary harmonious action and interaction of all parts of the brain has been deemed the origin of vertigo. And, finally, equilibrium has been considered as purely a psychic act, dependent more upon the conjoined normal activity of the will, memory and reason than upon any physical lesion in the sensory or motor areas of the brain. There are plausible arguments for every one of these hypotheses, but the theory is yet to be advanced that will satisfactorily explain all forms of disturbed equilibrium, those purely reflex as well as those that seem to be without cause.

However we may regard the experiments of Flourens and Goltz as proofs of the function of the semicircular canals, clinical evidence compels us to admit that they alone do not subserve the maintenance of equilibrium. The multiplicity of impressions constantly pouring in upon the brain through the various avenues of sensation other than the ear must necessarily assist in keeping the mind under such a degree of tension that the slightest disturbance in one way or another will perforce result in mental confusion and more or less vertigo. As Foster has aptly put it, "All day long and everyday, multitudinous afferent impulses, from eye and ear, and skin and muscle, and other tissues and organs, are streaming into our nervous system, and, did each afferent impulse produce its correlative motor impulse, our life would be a prolonged convulsion. As it is, by the checks and counter checks of cerebral and spinal activities, all these impulses are drilled and marshalled and kept in hand, in orderly array, till a movement is called for; and thus we are able to execute at will the more complex bodily manœuvres, knowing only *why* and unconscious, or but dimly conscious, *how* we carry them out." We know how any sudden mental excitement will cause a nervous person to become dizzy and nauseated; but to establish the condition of true vertigo, the disturbance must needs be more positive in its character, continuous in its action and uncontrollable either with moral or physical means.

Physiological psychologists are pretty well agreed now that our knowledge of the relation of things, as well as of space and its dimensions, is the result of the experience gained by the use of our muscles. The infant becomes gradually cognizant of these dimensions of space by the constant application of its hands to the objects which it sees. Even the sight, which is the only other sense that reveals to us an extended objective world, and that never shows us more than two dimensions of space at one and the same time, does so entirely through the muscular sense exercised in the use of the muscles of the eyeball. Experiment, as well as clinical observation, proves this. Now when we study the nature of equilibrium, we discover that it is de-

pendent upon a normal consciousness of the proper relationship of things found outside of the centres of consciousness. It is not purely psychic, as some have thought— a mental disturbance caused by an abnormal action between the mental faculties. There is the sensation of a motor process in it. Dr. Hughlings Jackson has long urged the importance of this fact, and Dr. Reynolds pointed it out in 1854, when he wrote: "The feeling of equilibrium results from the harmony of our different sensations among themselves and with the motor impulse which is their combined effect. When any one group of the sensorial impressions is distorted or removed, the balance is disturbed, and as these impressions are themselves the stimuli of muscular action, attempts are made for its restoration . . . producing vertiginous or allied movements." The principal factors in the preservation of equilibrium are consciousness and normal sense impressions. In point of time the normal sense impressions should stand first, for if they are discordant the consciousness itself becomes more or less obscured, as in the condition popularly known as dizziness. Consciousness, on the other hand, must be more or less alert for the condition of vertigo to obtain, since obviously when consciousness is in total abeyance, vertigo cannot be experienced, however conflicting and discordant may be the in-pouring sense impressions. In true vertigo there is no actual loss of consciousness, but at the acme of an attack the latter may be very greatly obscured. Hence we conclude that vertigo is a disturbance in the action of some centre or centres, and not a mere consciousness of some peripheral disorder; and that the two immediate factors in its causation are, disturbance of those cerebral centres which go to make up consciousness, and of the peripheral sensori-motor apparatus manifested directly or indirectly through the so-called "muscular sense." A vertiginous impression reflected through the consciousness may end in a *complete* or *incomplete* motor act. In the latter case there is merely a residual disturbance of past impressions without a fulfilment of the present impulse in complete motion, while in the for-

mer, the patient is uncontrollably moved in one direction or another.

If the views of Spitzka and Starr in regard to the sensory paths in the medulla be correct, they bear strongly in favor of this sensori-motor theory of vertigo. Thus Spitzka concludes that impressions from the cochlea reach the cortical centres in the superior temporal gyrus by way of the posterior division of the eighth pair of nerves, the trapezium of the same side, part of the lemniscus, posterior pair of the corpora quadrigemina, sutured geniculate body and the corona. According to some late observations of Starr, which prove the correctness of the views of Flechsig and Von Monakow, the lemniscus tract is associated with the so-called "muscular sense," and is chiefly distributed to the inferior quadrigeminal body. Some physiologists think that it is even continued up as far as the corona. It is believed that this tract is associated with the sense of sight as well as with the co-ordination of movements. Flourens found that injuries to the corpora quadrigemina of one side caused "forced movements," and that their complete removal resulted in inco-ordination of movement; yet we have no knowledge of any connection between these bodies and the cerebellum, though it is barely possible such a connection does exist. At all events, the point which I wish to insist upon is the close relationship of all these tracts for sight, hearing, and the "muscular sense" in the corpora quadrigemina and the more distinct termination of all these tracts in the cerebral cortex than in the cerebellum.

If vertigo were a kind of encephalic ataxia, and due simply to disturbed co-ordination, it might be readily located in the cerebellum, and then the *probable* connection of this part of the brain with the organs of sight, hearing and muscular sensibility, would easily explain the vertiginous sensations in disease of any of these peripheral end-organs. While the function of the cerebellum may be that of co-ordination and the maintenance of "continuous tonic muscular contractions," and while, as Spitzka tersely remarks, it may be the centre where "impressions of touch and position are associated with those of time and space,"

I find no authority for assuming that it is in any way the centre for the institution of movements, or the maintenance of these movements in a regular, methodical manner, which to my mind is the underlying phenomenon of true vertigo. Vertigo is something more than simple incoördination, though incoördination may enter as one of its principal elements. In vertigo there is a disturbance not merely of the reflex functions, but of the higher powers as well. The motor and sensory phenomena of vertigo, in typical cases, at least, are not mere sequences of abnormal motor and sensory impulses, but they are the impulses themselves. The distinction which I am endeavoring to make is the same as that between the ataxic movements of posterior spinal sclerosis and the spontaneous movements of chorea. In the one case there is the retention of power, but the loss of co-ordination; in the other there is loss of power with or without co-ordination. Simple incoördination manifests itself in irregular, unmethodical movements, and thus shows that it is due to an affection of some subordinate regulating centre of the brain; true vertigo, like chorea, manifests itself in regular, methodical movements and thus reveals disease of a higher independent centre.

It is a significant fact, when considered in this connection, that the vertigo which is so characteristic of cerebellar disease, and which is identical with the vertigo of Menière's disease, is caused only by lesions in the middle lobe or that part of the cerebellum which is most liable to involve the sensory-motor tracts of the medulla; and furthermore, that lesions of the lateral lobes not pressing upon or involving the middle lobe do not give rise to any known symptoms. And it is still more significant that vertigo is not pathognomonic of cerebellar disease, for it may be caused by lesions in other parts of the brain as well. Even in its co-ordinating function, it is more probable that the cerebellum, instead of sending out direct co-ordinating impulses to the muscles, merely co-ordinates the impulses sent down from the cerebral centres above. Indeed, as Ranney has said, "it is a curious fact that most of the effects of cerebellar

lesions are attributable, to a greater or less extent, to irritation of the crura."

Every indication points to the fact, then, that we must look for the centre of equilibrium not in one particular part of the brain, but in the harmonious action of the various sensory and motor centres upon one another.

Now for the application of all this. One of the most common peripheral disturbances of this sensori-motor equilibrium is disease of the ear. Hecker has said that "the ear is the most intellectual of all the organs," and in regard to its effect upon the mind, both in health and disease, it is indeed second in importance only to the eye. Without stopping to consider the many causes of vertigo dependent upon affections of the external and middle ear, let me refer briefly to a few points in connection with labyrinthine vertigo. It is pretty generally considered now that only the semicircular canals are affected in *true* Menière's disease. At least that is what Menière himself seems to have believed. His second and fourth propositions are that certain functional troubles, having their seat in the *internal auditory apparatus*, may give rise to cerebral symptoms, such as intense vertigo, uncertainty of gait, turnings to the right or left and falling, all of which may be attended with nausea, vomiting and syncope; and that all this tends to confirm the belief that the lesion which is the cause of these functional troubles is in the semicircular canals. In his original paper he described ten cases, in only one of which was there an autopsy. This case, the tenth of the series, had no disease of the nervous centres, but the semicircular canals were filled with a "reddish plastic material." It was on the strength of this single observation that he declared the canals to be the cause of the cerebral symptoms. Aside from the unscientific character of such a hasty generalization, this one case, as Bremner points out, will hardly explain those in which the cerebral symptoms come and disappear rapidly. And if the hæmorrhage into the semicircular canals were the cause of the trouble here and in the majority of the apoplectiform cases, as Knapp argues, it remains

to be shown why the hæmorrhage should be bilateral, since the aural symptoms are so frequently bilateral.

Ever since the first announcement of this affection there has been much confusion in regard to it. Disease of any part of the internal ear, and even of the middle ear, has been called Menière's disease, though, as we have seen, Menière himself was careful to restrict the lesion, in its apoplectiform form at least, to the semicircular canals. Knapp, whose paper upon the subject is second only to that of Menière himself, includes all affections of the entire internal ear, irrespective of their causes, under the name of Menière's disease. I have examined his cases, and fail to see why he should insist so positively upon the inner ear as the cause of the vertigo and other cerebral symptoms. In his third case, which he is careful to specify as a fair example of Menière's disease, one of the most prominent symptoms was diminution of the sight—a condition which remained after many of the other symptoms had disappeared. After discussing in full Voltolini's famous case in which an autopsy revealed an extensive leptomeningitis with pus at the base of the brain in the pons, medulla and cerebellum, and some hæmorrhage into the labyrinth of the ear, he makes the sweeping generalization that "the changes in the nervous apparatus of the labyrinth consequent on the hæmorrhage must have been such as to destroy the hearing function forever." Thus he totally ignores the possibility, and in Voltolini's case the extreme probability, of the central injury being the cause of the deafness as well as of the vertigo and other symptoms. In Politzer's case, with autopsy, there was a fissure of traumatic origin at the base of the occipital bone, which probably was the cause of the meningitis of which the patient died. Pain at the base of the brain was here a marked symptom.

According to Knapp, loss of consciousness, constant tinnitus and cloudiness of the visual field are, strange to say, symptoms prominent amongst those of Menière's disease; and I am incapable of understanding his argument when he says that "deafness for certain groups of musical sounds is proof positive that the disease is neither limited

to the acoustic nerve outside the labyrinth, nor to the semicircular canals and vestibule, but that it extends to the cochlea." It seems to me pressure of an encephalic tumor, for example, upon a part of the nerve, might readily account for a loss of hearing to certain tones of the key-board.

In most of the reported cases of Menière's disease that I have seen, while there was a possibility of the ear trouble being the origin of the special symptom-group, there was an equal possibility, and in very many of the cases a strong probability, that the more prominent symptoms were due to a central or medullary lesion, and that the aural symptoms were merely a coincident member of the group.

Gowers, who is one of the strongest advocates of the labyrinthine origin of vertigo, adduces five arguments in favor of his position. His first is based upon the number of cases reported by Menière and others. I have already shown how inadequate are the proofs from this source. His second is, that irritation rather than mere loss of function in the nerve is proved by the disease being attended with severe vertigo, which may cease when the progress of the disease has produced complete deafness. There is usually so little correspondence between the severity of the vertigo and the amount of the deafness, as Gowers himself remarks elsewhere, that this argument fails. His third is that in the majority of the cases of definite vertigo, the slight or considerable tinnitus that is present is evidence of a process of irritation of the fibres of the nerve. That is true, but the argument is no proof of the source of the irritation being in the semicircular canals or labyrinth. Tinnitus is not an unusual symptom of extra-labyrinthine lesions. His fourth argument is, that slight loss of hearing, tinnitus and vertigo may be observed not only to come on together, but to pass away together. I fail to see that this proves anything more about the labyrinthine origin of the symptoms than does the previous argument. Lastly he asserts that "the frequency with which symptoms of labyrinthine disease are found in cases of vertigo is itself a fact of very great significance. Of 106 consecutive cases in which definite vertigo made the patient seek advice, in no less than 94 ear symp-

toms were present, tinnitus or deafness, or more often both." The figures are undoubtedly significant in proving the frequent association of vertigo with auditory symptoms, but they are hardly commendable as an argument of the labyrinthine origin of the vertiginous sensation. It seems to me, therefore, that these propositions, which I have presented almost in the author's own words, do not make out a very strong case in favor of the labyrinthine origin of the vertigo; certainly not sufficiently so as to warrant the large percentage of cases of vertigo which this writer attributes to diseases of the internal ear.

It seems to me, furthermore, that he is almost self-contradictory upon this subject. He lays stress in aural vertigo upon the coincidence of the auditory symptoms with the vertigo, and shows that this is due to the continuity of structure in the cochlea and semicircular canals. He says "it is conceivable that labyrinthine vertigo may occur without any auditory symptoms. I have actually seen two or three cases in which definite giddiness existed alone and in which auditory symptoms came on later." Then, when I turn to his account of gastric vertigo, I find this: "I do not think it is quite certain that there is such a thing as definite vertigo of purely gastric origin. . . . We know that in 95 per cent. of the cases of definite giddiness a morbid state of the labyrinth is the real cause of the vertigo." This leads us to infer, then, that in 95 per cent. of the cases of vertigo there are distinct auditory symptoms. Few general practitioners will be prepared to admit so sweeping an assertion. The scarcity of autopsies and the frequency with which *Menière's* symptoms are found in other nervous affections, such as epilepsy, hysteria, and posterior spinal sclerosis, should render us cautious in attributing the vertigo, loss of hearing, etc., to labyrinthine disease.

After admitting the implication of the semicircular canals in aural vertigo, it is still a difficult matter to explain the vertiginous symptoms and loss of hearing upon this hypothesis in all cases. The one which I have reported might easily have been regarded as a case of *Menière's* dis-

ease, and yet there is no reason to suppose that the vertigo and deafness were due to disease of the semicircular canals. I believe that the function of these canals in the maintenance of equilibrium has been much overestimated, certainly too positively inferred in view of the slight physiological and pathological data which we have as yet for such an inference. Simple puncture of the auditory nerve in rabbits gives rise to rotary movements on the part of the animal, and it is a well-known fact that injection of water into the external ear as well as inflammation of the middle ear causes vertiginous sensations. In these cases there is the sensory disturbance, but can we suppose that in all of them the semicircular canals are so grossly affected as to be the only immediate cause of the vertigo?

Both Steiner and Sewall carefully removed the semicircular canals from the shark, whose auditory apparatus is practically identical with man's, without obtaining any disturbance of movement. After careful investigation, Böttcher and Baginsky have come to the conclusion that the cause of the rotation of the head in Flourens' and Goltz's experiments was injury done to the brain and not merely to the semicircular canals. In the experiments of the former, the head did not always rotate in accordance with the particular canal injured, as Goltz had formulated. The identity of these canals with the cochlea in the embryo, their continuity with the epicerebral space through the aquæductus vestibuli, and their ever-shifting relations among themselves in the quadrumana which go about sometimes in the horizontal, sometimes in the erect position, argue strongly against the special function of these canals being the maintenance of equilibrium. Doubtless there are important sensory impulses of a special character which pass through these organs, but equilibration, due as we have seen to the fusion of a vast complex mass of sensations pouring in upon the brain from all sides, cannot possibly be the result of merely a single set of impulses from such an end-organ as the semicircular canals. The very nature of vertigo involves the idea of more or less loss of consciousness, and

this alone would seem to indicate a higher cause for the trouble than simply these canals. Experiment only proves that they are the organs for the perception of direction, but vertigo is something more than the loss of this power alone.

If it be granted that the pathological cause of this vertigo is found in the semicircular canals, it is hard to understand how in all cases the cochlea or the cochlea branch of the auditory nerve should necessarily be affected. In Flourens' experiment, the entire removal of the canals did not impair the hearing. So striking was this that Flourens, as well as others, was led to believe that the branch of the auditory nerve which supplies the semicircular canals subserves motor purposes only. On the other hand, if the results of Gelle's experiments are to be trusted, the cochlea is in no way the source of vertiginous impressions. Simple continuity of structure will not account for the sudden loss of hearing when the lesion is hæmorrhage into the canals, and pressure alone will not answer as a cause in all cases of so called Menière's disease. In the first place, there is no regular correspondence between the amount of deafness and the intensity of the vertigo; secondly, with total loss of hearing in Menière's disease, all known methods of diagnosis prove that the nerve itself, and not merely the internal ear, is affected; thirdly, physiological experiment shows that simple pressure does not cause total loss of hearing when no injury is done to the cochlea or cochlea branch of the auditory nerve; and finally, no case has ever been reported in which the cochlea was primarily affected with consequent involvement of the canals and vertigo, though in blood supply and anatomical structure the cochlea and canals are similar. Hence, in Menière's disease I conclude that the lesion must concern the whole labyrinth or lie entirely outside of it.

It was Dr. Wilks, of England, I think, who held that Menière's disease was a neurosis of the centres of audition and equilibrium, and, in its paroxysmal form at least, was much like migraine with its eye complications. While this explanation cannot be adopted for all cases, there is little

doubt about the central nature of the disease in many of its aspects. Burnett declared that "the neuropathic diathesis is well marked in most cases of aural vertigo." The grouping of the symptoms as well as the proximity of the tracts and centres involved, point to the encephalic origin of the affection. Especially is this indicated, however, by the sensori-motor nature of the vertigo whatever be the peripheral source of disturbance, and its association with the state of consciousness.

Running between the superficial and deep roots of the auditory nerve are the external and internal divisions of the inferior peduncle of the cerebellum. According to Spitzka and Edinger, the posterior nerve-root transmits sound impulses, while the anterior root is the path for the impressions which assist in the determination of the equilibrium. Some of the motor fibres of the auditory nerve pass to the ampullæ of the semicircular canals, while others are doubtless associated with the anterior root in particular and the peduncle of the cerebellum. Thus the close connection between the nerve of hearing and the sensori-motor tracts in the medulla, as well as the proximity of the auditory and pneumogastric nuclei, account for the frequent association of the symptoms, deafness, vertigo and vomiting. Any disturbance, then, in the course of the auditory tract, such as in the case I have reported, is liable to give rise to Menière's symptoms. The lesion may assume many forms, but the important point is, that it need not be necessarily limited to the labyrinth. In many of the cases reported, the probability is that it was altogether extra-labyrinthine.

In conclusion, I would say that in Menière's disease the source of irritation may sometimes be in the semicircular canals, just as sometimes it may be in the eye or in the stomach, but that the immediate cause of the vertigo cannot be there, for several reasons:

First: If the above explanation of the nature of vertigo be correct, it is a condition dependent upon the harmonious interaction of the sensori-motor centres of the cortex, and disturbance of these is the real cause of the vertigo.

Secondly: If equilibrium depended solely upon the semicircular canals, there could be no rational explanation for the ocular and stomachal vertigoes.

Thirdly: If the proximity of the various nuclei within the medulla be a sufficient explanation of the association of the symptoms, vomiting, unconsciousness, vertigo and loss of hearing, when the semicircular canals are affected, why, we may justly ask, do we not in stomachal, laethemic and other vertigoes have more marked auditory symptoms?

Fourthly: Experimental injury to the semicircular canals is not followed by true vertigo, loss of hearing and the other constant symptoms of Menière's disease.

Fifthly: Pathological data do not entirely and satisfactorily support Menière's hypothesis. His only case with autopsy can easily be explained upon other grounds, and nearly all of the other cases reported by Politzer, Voltoline and others had severe cerebral lesions, sufficient to account for the symptoms presented.

Finally, it is to be noted that of Bezold's carefully collected 46 cases of necrosis of the labyrinth, only 12 manifested symptoms of vertigo.

Burnett says: "Aural vertigo may be termed a reflex cerebellar phenomenon from irritation in the auditory apparatus." That may be true as far as it goes, but from what I have endeavored to show, aural vertigo may not be aural at all, except in so far as having certain aural symptoms associated with the vertigo; and we are not justified, in view of the few physiological and pathological data still at hand, in assigning all cases of vertigo with loss of hearing to an unknown and undemonstrable lesion of the internal ear.

1938 N. Broad Street, Philadelphia.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

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| <i>From the Swedish, Danish, Norwegian and Finnish:</i> | <i>From the Italian and Spanish:</i> |
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| <i>From the German:</i> | <i>From the Italian and French:</i> |
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| JOHN WINTERS BRANNAN, M.D., New York. | <i>From the German, Italian, French and Russian:</i> |
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| G. M. HAMMOND, M.D., New York. | A. FREEMAN, M.D., New York. |
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PATHOLOGICAL.

APROSEXIA IN CHILDREN.

In the "Practitioner" (July, 1890) Ernest A. Shaw calls attention to this condition among those suffering from adenoid vegetations of the pharyngeal tonsil. Deafness and inattention result from this overgrowth. Treatment brings about improvement in the mental capacity far in excess of improvement in hearing—a result that tends to show that the deafness is not altogether responsible for the mental deterioration. It is well known that the intracranial veins and sinuses have communications with the veins of the frontal, ethmoidal and sphenoidal sinuses, and through these with those of the nose and naso-pharynx. Axel Key and Ritzius have demonstrated that the intracranial lymphatics are in connection with lymphatics lying in the cranial nerve-sheaths, and that these lymphatics, passing from the region of the brain through cribriform plate of the ethmoid in the sheaths of the branches of the olfactory nerves, are in direct connection with the nasal and the naso-pharyngeal lymphatics, which in their turn pass to the lymphoid tissue and glands of the naso-pharynx. Thence the efferent lymphatics proceed to the lymphatic plexus of the pterygoid muscles, and from there to the anterior cervical glands. It seems reasonable to assume that there is a connection between the metabolism of the lymphatic systems of the nasal and naso-pharyngeal region

of the anterior lobes of the brain, and that in the latter is the seat of the faculties of attention and observation.

Coexistent with the hypertrophy of lymphoid tissue which produces the adenoid vegetation there is found an increase of the more purely fibrous connective tissue in the immediate neighborhood. It seems not unreasonable to assume that this connective tissue, following its usual tendency to contract, causes an obstruction to the flow of lymph by compression of the lymphatics that lie in it. In this way part of the waste-tissue products derived from the metabolism going on in the cortex of the fore-brain is prevented from making its escape and remains in the cerebral cortex, thus interfering with and hindering its proper nutrition. The resulting condition expresses itself as aprosexia.

L. F. B.

SUNSTROKE AND INSANITY.

Dr. T. B. Hyslop, in the "British Medical Journal," August 23, 1890, states that out of 1,947 admissions to Bethlemon, the cause of insanity in 49 (2.6 per cent.) was attributed to sunstroke. In many cases the symptoms so closely resembled general paresis as to be mistaken for it. In infancy, sunstroke is given as a cause of accidental idiocy or imbecility.

Epilepsy is its most common sequel; mental defects and convulsions are collateral phenomena. Insanity following sunstroke resembles that due to traumatism. L. F. B.

ANALGESIA IN INSANITY.

Dr. J. M. Keniston has a paper on this subject in the "American Journal of Insanity," October, 1890. The best test for the presence of analgesia consists in the absence of any muscular contraction, resistance, spasm or shrinking, and of signs of distress, as facial contortions, outcries, etc., on irritating any portion of the body. This irritation may be produced by pricking with a coarse needle, pinching, the electric brush, etc. Failing by these methods to induce any manifestation of pain, it is fair to infer the presence of analgesia.

In some cases the passage of stimuli to the brain is delayed, and it may be necessary to wait from ten seconds to a minute or more before deciding positively that the pain-sense is absent. Phthisis among the insane often runs its course without pain or cough and with little or no dyspnœa.

Possibly the remarkable prolongation of life in some insane consumptives is due to this absence of sensibility.

In epileptic insanity, analgesia usually follows a seizure, lasting from a few minutes to several hours. In epileptic dements, analgesia may be permanent.

Pleurisy and pneumonia among the insane sometimes are painless disorders; and so also are acute peritonitis, fractures, dislocations, cancer, otitis, abscess, carbuncles, wounds and contusions.

Headaches and neuralgias are by no means as frequent as might be supposed. Ingrowing toe-nails have been removed after Cotting's method without anæsthetic, the patients remaining motionless and apparently insensible to pain. Analgesia will generally be found in patients who pull out their hair, pound or burn themselves, or in other ways attempt self-mutilation.

In spite of the frequency and importance of analgesia among the insane, it is impossible to assign it to its proper place in the large list of nervous perversions found in the various types of mental disorder. In general paresis, analgesia is very common in the last stages. Spitzka alludes to a case where a remarkable anæsthesia of the larynx existed for years before the discovery of the paresis. In alcoholic and syphilitic insanities, analgesias are very frequent. In dements it is not found as frequently as might be expected. In chronic insanity it is often found, and also in imbecility and idiocy. It is more common among men than women. Its presence cannot be predicted in any case, but it is well to look for it always. If it proves to be at all frequent in the early stages of alienation, a new and valuable aid to diagnosis will be at our command. L. F. B.

OVERWORK AND GENERAL PARESIS.

In the "Bulletin de la Société de Médecine Mentale de Belgique," September, 1890, Dr. Cuyllits endeavors to find out what overwork really is, and its relation to general paralysis. Is the healthy brain capable of overwork? Healthy men, in spite of earnest endeavor, fail to study or work till they have a headache. Long before the headache period is reached they lose the power of thought and fall asleep. Genius accomplishes great things without succumbing to excessive toil—as Shakespeare, for instance. To relieve pain, Pascal wrote his "Pensées;" and the trials of Montesquieu were solaced by work.

Intellectual labor *per se* is without danger. Witness the

great age of men of mind: Newton eighty-five, Humboldt ninety, Van Ranke over ninety, Victor Hugo eighty-three, and Michael Angelo, Titian, Cherubini, all over eighty when they died. With the hereditary degenerate the matter is quite different: his mental tasks are performed at the price of fatiguing, constant, conscious effort; emotion, enthusiasm, study, everything overworks him; he goes through life like a lame man in the street—always in danger of falling and sustaining a fracture.

The normal brain is capable of supporting great demands without even consequent dementia. It atrophies slowly—more slowly than all other organs in extreme old age. The overworked—the only one that can be overworked—fall victims to melancholia and dementia. But the attempt to find in overwork a cause for paralytic insanity is utterly vain.

L. F. B.

ON POLYNEURITIS.

At the third congress of the Italian Society of Internal Medicine, held in Rome, October 20–23, 1890, the subject of multiple polyneuritis was discussed: Grocco, of Pisa, referee; Rummo, of Pisa, co-referee. The former took up the semiology of the affection, leaving to his colleague the etiology and pathological anatomy.

The symptoms of polyneuritis are in general quite variable. In some cases the motor and sensory troubles dovetail together in strange shape. In others the sensory disturbances predominate to such an extent as to simulate tabes. Sometimes there is œdema of the parts affected, and even articular and visceral lesions. We know that polyneuritis pursues an ascending march, not only with respect to the nerves of the limbs, but also to those of the viscera. It is generally admitted that with regard to the visceral symptoms, polyneuritis produces only cardiac and visceral troubles. Grocco has also observed gastralgia and laryngeal spasms as a consequence of neuritis of the nerves of the larynx. There are also cases where the polyneuritis manifests itself only by visceral symptoms.

As trophic disorders, observers have noted in multiple neuritis sometimes considerable emaciation, sometimes an œdema resembling that of nephritis, sometimes a progressive anæmia.

In the majority of cases the disease begins by peripheral nervous troubles, which are followed more or less rapidly

by cerebral symptoms. Sometimes death is ushered in by convulsions.

Polyneuritis may have an acute, sub-acute and chronic course. It may be chronic at the onset, to become acute afterward. Grocco has sometimes observed light cases of polyneuritis of abortive form. The attacks of pain in the limbs are sometimes followed by intense visceralgias, which he has called *nervous crises*. He believes that certain myalgias and arthralgias attributed to rheumatism may also be put to the credit of polyneuritis.

The diagnosis of polyneuritis is sometimes easy, sometimes also of extreme difficulty, especially when it is a matter of differential diagnosis from anterior poliomyelitis. In fact, there are cases where the ordinary symptoms of polyneuritis are completely lacking, and where the diagnosis can only be established by the method of exclusion, as in pseudo-tabes, or where the neuritis is localized in a single nerve territory.

The etiology of polyneuritis is still far from having been elucidated. Certain writers think that polyneuritis is due to lesions of the anterior cornua of the cord and of the vasomotor nerves. Grocco rejects this theory, and considers the disease as an autochthonous affection, developing under the influence of certain infections or poisons. If the other tissues of the organism may be subject to autochthonous affections, why not the nerves? And if the virus of an infection may smite an isolated nerve, why not many nerves at the same time?

As for the treatment, this varies according to the period of the disease. The first period demands absolute repose, morphine, and later the iodides. In the second period, galvanism may be demanded. To combat the paralysis, recourse may be had to strychnine and electricity.

Rummo, of Pisa, co-referee, was disposed, from his anatomo-pathological studies, to refer all cases of polyneuritis to a toxic origin. The toxic agent itself may be variable; it is a mineral or organic poison, or else it is a microbe; lastly, we may have to do with an auto-intoxication.

To the etiological unity of the polyneurites corresponds their anatomo-pathological unity. In fact, all the polyneurites, whatever may be their cause, may be interstitial or parenchymatous. But these two anatomical forms are but different stages of one and the same process, similar in all respects to that which takes place in the peripheral end of a divided nerve.

The toxine or virus which produces polyneuritis acts at first on the myeline sheath, then on the axis cylinder, whose alteration should be considered as secondary. The predilection of certain poisons for certain groups of nerves is a fact well known, but the explanation is still to be sought.

In the discussion which followed, Giuffrè, of Palermo, remarked that the œdema in polyneuritis might be attributed to lesions of the vaso-motor nerves which accompany the peripheral nerves. We may then admit the existence of vaso-motor polyneurites.

Franco, of Naples, related a case of polyneuritis which he treated by sudation. The improvement was slow, but continuous, and ended in recovery.

Di Pietra demanded if polyneuritis may bring in its train a pseudo-hypertrophic muscular paralysis.

Grocco did not believe that a pseudo-hypertrophic muscular paralysis could be the consequence of polyneuritis. It will not do to forget that there are cases of polyneuritis with œdema of the muscles which simulate pseudo-hypertrophic paralysis. He (Grocco) has also employed warm baths and the douche in polyneuritis, but the results of this treatment have been bad.

Rummo, in closing the discussion, admitted the possibility of the coexistence in the same patient of polyneuritis and of pseudo-hypertrophic paralysis; the one affection may rapidly follow the other. Some day we may perhaps find a certain relation between polyneuritis and the different forms of amyotrophy.

E. F. H.

FRAGILITY OF BONES IN CHRONIC DISEASE OF THE CENTRAL NERVOUS SYSTEM.

Dr. Konstantinovskiy, in the "Medical Chronicle," contributes a monograph on this subject. The materials for study were derived from autopsies held on the bodies of patients who had suffered from insanity for varying periods. Twelve had had progressive general paralysis; four, dementia of various forms; two had been imbecile; four had acute or chronic paramia hallucinations; one, a brain tumor; one, spinal myelitis; and two, endocarditis and tuberculosis. The (a) chemical constitution of the ribs, (b) the degree of their brittleness, (c) the macroscopical peculiarities, and (d) their histological characteristics, were all inquired into. In summing up the result of his work, the writer was of the opinion that in chronic disease of the

nervous system, especially insanity, the ribs were apt to undergo very morbid changes, giving rise to increased brittleness, and hence the predisposition to fracture from the slightest violence. In this same line of study, the history of a case of mania, followed by hyperæsthesia and osteomalacia, is reported by Dr. J. C. Howden, in the "Glasgow Medical Journal." In his case post-mortem examination revealed softening of all of the bones in the body, with the exception of those of the skull. Although in the course of the disease the pain and hyperæsthesia had been remarkable, the existence of mollitis ossium had never been detected during life, as the patient had lain constantly in bed.

B. M.

CLINICAL.

APHASIA.

In the "Revue Générale de Clinique et de Thérapeutique" (October 1, 1890) three cases are reported by Dr. De La Barcerie. Primary aphasia, according to this author, is due to a lesion in the right or left frontal convolution. The apoplectiform stage is owing to congestion, and not hemorrhage. There is no partial or complete hemiplegia. Paralysis of the tongue, however, has its origin in a cerebral lesion, either embolism or hemorrhage, that involves the fibres of the hypoglossal nerve in the neighborhood of the pyramids and olivary bodies.

L. F. B.

APHASIA.

In the Johns Hopkins "Medical Bulletin" (April, 1890) Charles E. Simon reports the following case: A. H., sixty-two years old, married, peddler by trade; always well; never the subject of any serious illness. Four years ago, before the present trouble came on, he was considerably worried by the loss of the white garment in which, as a strict observer of Mosaic law, he was in the habit of saying his prayers. His disturbance of speech he regards as a direct punishment from above. Another mental shock resulted in total loss of speech for a few hours. Later in the day he could chat with his family. The next morning, unable to utter a word, he indicated his condition by wild gestures. Under electrical treatment he gradually recovered to a certain extent. Headache and intense giddiness

(relieved by lying down) and a certain degree of excitability and irritability are prominent symptoms. Sight, hearing, taste and smell are normal; memory good. The patient can make purchases. There is want of power to arrange words in grammatical sequence. Though he says he cannot, he can write at dictation when given word for word, sometimes mistaking occasionally *è* for *d* and an *a* for a *b*. Volitional writing is impaired and almost entirely lost, except writing his own name. His understanding of printed language is good, and reading aloud normal, as is the faculty of copying words.

L. F. B.

BERI-BERI IN THE PROVINCETOWN GRAND FISHING BANK FLEET.

In the "Boston Medical and Surgical Journal," November 13, 1890, Dr. W. S. Birge reports seven cases of beri-beri among the fishing fleet that returned from the Grand Banks in the fall of 1889. The disease does not often originate so far north. Its undoubted cause in this instance was defective nourishment, the salt beef being of poorer quality than usual and the supply of fresh provisions most meagre. Dampness and cold, that are always present on the Grand Banks, would undoubtedly act as factors in developing the disorder in a system impoverished and rendered anæmic from a diet at once unwholesome and deficient in nitrogenous principles. The catch of fish was at irregular intervals, so that fresh fish as food was of rare occurrence.

The sufferers were all naturally strong, able-bodied men, without previous trace of constitutional disturbance. The prominent symptoms in each were general œdema, dyspnoea with precordial distress, numbness of the lower extremities, with a peculiar shuffling gait, showing marked inability to lift the leg at the knee. In three cases there was enlargement of the spleen.

Treatment consisted chiefly in the use of a mixed diet, composed of coarsely prepared grains and a liberal allowance of fresh beef, of diuretics and hydragogue cathartics in marked dropsical effusion, together with digitalis and the administration of tincture of chloride of iron and iodide of potassium.

L. F. B.

DRUMMER'S PALSY—PAREISIS OF THE LEFT FLEXOR LONGUS POLLICIS.

Dr. Ludwig Bruns (Neurol. Centralbl., June 15, 1890) has

added a new variety to our list of occupation neuroses or palsies. The case he reports is that of a drummer of an infantry regiment, who was first seen by him March 28, 1890. The patient had already served one year as a soldier under arms. In October, 1889, he became a drummer, and was accustomed to practice about five hours a day.

Until the beginning of March, 1890, he experienced no trouble, but at that time he began to have occasional slight pains in his left forearm and ball of the left thumb. Some two weeks later the left thumb suddenly became immovable while he was drumming. He was at once seen by the regimental surgeon, and later, on March 28th, by Bruns, who noted the following condition: There was complete paralysis of the left flexor longus pollicis, the patient being otherwise healthy and powerful. He was totally unable to flex the last phalanx of the left thumb, and could oppose no resistance whatever to passive movements of extension. The functions of the left hand were otherwise but little affected. The patient was able to hold small objects between the thumb and fingers, and even pick up a needle with thumb and forefinger, but he could not hold the drumstick firmly.

There was no response to either faradic or galvanic current in the muscle of the flexor longus pollicis. On applying the battery to the median nerve at the elbow, the last phalanx of the thumb remained in extension, though all the other muscles supplied by the nerve contracted promptly. Bruns thought there was possibly a slight weakness of the adductor pollicis, but it contracted at once when the ulnar nerve was stimulated at the wrist. Sensation was everywhere good, and the patient complained of no pain.

Treatment consisted of galvanism and massage. By the middle of May the patient could flex slightly the last phalanx of the thumb, but the electrical condition remained the same as before.

In discussing the symptomatology and pathology of the above case, Bruns shows clearly what muscles are chiefly concerned in the act of drumming. The paralysis was evidently due to the over-use of a single muscle, and as it occurred only on the left side, we are not surprised to learn that in drumming the left hand is especially liable to strain. The mechanism is described as follows: The right hand is in a position of pronation with the dorsal surface directed upward; the right drumstick is held in the whole hand, as one would grasp a stick as a weapon; the wrist,

elbow and shoulder all take part in the necessary movements. The left hand, however, plays usually only the accompaniment; it and the left forearm are supinated, the palm of the hand being directed upward. The drumstick is held between the thumb and index finger, and its movements call only for slight pronation and supination of the hand and wrist. The adductor pollicis is the chief muscle involved in holding the drumstick firmly in the above position, but the flexor longus pollicis has also an important role. It maintains the distal phalanx of the thumb in a state of strong flexion, so that it grasps the drumstick like a hook and prevents its slipping toward the ends of the fingers. This muscle remains, therefore, in a state of contraction throughout the whole time of practice.

The above description explains why the flexor longus pollicis should alone show the effects of over-use, though Bruns admits that we might well expect the adductor pollicis to show some fatigue also. The author has been unable to find any published cases similar to his, but he is informed by military surgeons that a number of such cases have been observed.

Bruns recognizes that his drummer's paralysis differs from the ordinary occupation neuroses in that it is of peripheral origin, while they are for the most part of central origin. But he thinks the distinction is often difficult to make in practice. Even in the best known of the occupation neuroses, namely, writer's cramp, there are some cases in which we find true paralysis with changes in electrical reaction of the affected muscles, thus pointing to a peripheral origin.

J. W. B.

ANÆSTHETIC FACIAL MONOPLÉGIA.

Adamkiewicz (*ibid.*) reports the following case of this rare affection: An officer, 51 years of age, had noticed occasionally, for several years, a feeling of tickling and formication in the face, accompanied at times with burning pain; also a tendency to catarrh, and uncontrollable sneezing. Objectively there was complete anæsthesia in the region of both fifth nerves, all branches being affected on the left side, the first and part of the second branch on the right side.

Adamkiewicz thought the lesion peripheral and diagnosed neuritis and perineuritis with ascending atrophy of both trigeminal nerves.

J. W. B.

PUERPERAL NEURITIS.

P. J. Möbius (*ibid.*) has added another case of puerperal neuritis to those described by him several years ago. The patient had had a perfectly normal labor and the puerperium was free from fever. She first complained of pains and parasthesia in the upper extremities with diminution of motor power; two weeks later the same symptoms in the legs; no anæsthesia, reflexes normal, also the response of the muscles to mechanical irritation; muscles somewhat atrophied in upper extremities, but not in the lower.

Recovery under treatment by iodide of potash. Later, a mild form of neurasthenia, but without any of the above symptoms of neuritis, except tenderness on pressure of the brachial plexus.

Möbius considers the initial localization of the illness as characteristic, for in the later course all forms of neuritis may become general and give us the same picture.

There seems no reason to suspect puerperal infection as an etiological factor in this case; at all events, the patient was entirely without fever throughout the illness. Auto-infection has, however, been suggested by the observations of other writers, who have described similar cases of neuritis, some even occurring during pregnancy itself. J. W. B.

DISEASE OF THE VAGUS IN ANGINA PECTORIS.

N. Obolensky (Centralblatt f. Nervenheilkunde, June, 1890) reports the following case: The patient was admitted to the hospital with palpitation of the heart, dyspnœa, pain in the sternal region and thoracic walls, and in the arms. His distress occurred periodically, and was increased by movement; during the attacks great anxiety and cyanosis of hands and lips. The vagus nerve was extremely sensitive to pressure in the cervical portion.

Obolensky diagnosed a primary syphilitic affection of the vagus, and under specific treatment the patient was rapidly and completely cured. J. W. B.

INJURY OF THE FRONTAL LOBE.

In the "Edinburgh Medical Journal" for October, Dr. Thomas Leishman reports a case of extensive injury of the left frontal lobe from the bursting of a gun-barrel. The cavity in the frontal bone extended upwards from the middle of the left supra-orbital ridge for a distance of two inches transversely, at the upper margin one and a half

inch, and at the lower margin nearly one inch. The injury to the brain substance was very considerable, spiculæ of bone being driven down into it, which were with great difficulty removed. The left eyeball was completely destroyed. For two weeks the patient was in a semi-comatose state. The pupil of the right eye reacted to light. At the end of that time the discharge from the wound became very offensive, and the mass of protruding brain substance sloughed. Cicatrization finally began to take place, with an improvement in the physical and mental condition of the patient. Eighteen months after the accident he was able to go about, and finally did farm work. His condition had remained stationary for several months, when he began to notice some loss of power in the right hand, with failing memory and severe periodical headaches. These symptoms had progressively increased in severity, showing undoubted retrogressive lesion of the brain. B. M.

THERAPEUTICAL.

CROTON-CHLORAL IN NEURALGIA.

In the "Medical News" (August 30, 1890) Dr. H. A. Hare calls attention to this remedy for insomnia due to painful affections, as in cranial neuralgia. The active dose is five grains, though forty may be given. In migraine, sick headache and bilious headache Ringer recommends it. In true migraine with hemianopsia it is one of the most useful remedies. It is a perfectly safe drug, and moderate doses can be used in heart disease. L. F. B.

CURATIVE TREATMENT OF EPILEPSY BY SURGICAL MEANS.

The "Canada Medical Record" (September, 1890) has a paper with this title by Dr. Casey A. Wood. The removal of necrosed or depressed bone and foreign bodies, the exsection of scars, tenotomy of ocular muscles, nerve-stretching, the application of ligatures and the actual cautery, tracheotomy, etc., all receive attention as surgical measures offering more or less hope of cure. L. F. B.

CODEINE AS A SUBSTITUTE FOR MORPHINE.

H. Loewenmeyer (Centralblatt f. Nervenheilkunde, May, 1890) has been experimenting with codeine in the Jewish

Hospital in Berlin, giving it in all cases in which he was formerly accustomed to use morphine. About 5,000 doses were given in the course of a year to about 400 patients, many of whom took it for weeks and even months. His conclusions are summed up in one sentence: Codeine is a drug acting like morphine, but without injurious concomitant effects.

The result in the various painful disturbances of the abdominal and pelvic organs, in gastralgias, colics, visceral neuralgias, etc., was generally satisfactory. The patients obtained several hours' relief from their pains, and slept. With exacerbation of the pain, the same dose was again effective. The efficiency of codeine is even more important in those painful conditions which are due to organic changes. In gastric ulcer, in cancer of the stomach or bowels, the desired effect was often obtained, but by no means in every case. Codeine was successful in relieving pain in but 50 to 60 per cent. of the cases, whereas morphine was effective in 90 to 95 per cent. It is not easy to state in what class of cases codeine proved of no use. We may say that those pains, which set in with great intensity, or come in paroxysms, can be but little influenced by codeine. In biliary and renal colic it had no effect. On the other hand, those qualities should be especially emphasized which are in its favor, viz.: the absence of any hurtful influence on the organs of the body, as well as of any symptoms which could be characterized as codeinism. It is, therefore, to be strongly recommended in those cases in which a protracted illness is anticipated. But it is not to be given in every painful abdominal process. The inflammatory affections of the peritoneum, in which peristalsis is to be restrained, call for opium, not codeine. If pain persists after subsidence of the acute inflammatory process, codeine is indicated and is usually effective; as, for instance, in the later stages of perityphlitis. It is also useful in controlling the pains of genito-urinary and ovarian affections.

The action of codeine, according to Loewenmeyer, is even more favorable in diseases of the thoracic organs. All the well-known symptoms of phthisis, such as the feeling of oppression in the chest, pains in the side, distressing painful cough, can be relieved for an indefinite period by codeine; morphine may be entirely dispensed with. In bronchial catarrh, pleurisy and pneumonia, codeine was given without harm, and usually with good effect. The drug also rendered good service in pulmonary asthma.

Patients afflicted with the severest forms of this disease, and who had grown accustomed to regarding their condition as incurable, were given codeine each time when they felt the approach of an attack, and were convinced that the attack was shortened thereby and the distress greatly relieved.

Its good effect was very marked in circulatory disturbances accompanied with irregularity of the heart, and also in cardiac dropsy; the distress of angina pectoris was notably diminished.

Loewenmeyer's experience in the use of codeine in nervous affections is less satisfactory and encouraging. It appears that it has practically little effect in pains caused by irritable conditions of the brain or spinal cord, or of the peripheral nerves. Its hypnotic action is, however, well worthy of mention.

In excitable conditions of moderate severity, in the sleeplessness of convalescents from severe illness, the remedy was usually very effective.

Loewenmeyer gave from one-half to three-quarters grain of codeine at a dose. Those cases in which this amount failed to act were not influenced by larger quantities. This dose was given three to five times a day for weeks and months at a time, without any apparent injurious influence.

J. W. B.

PSYCHOLOGICAL.

DISEASED CRAVINGS AND PARALYZED CONTROL.

Dr. Clouston's papers on this subject, that appeared earlier in the "Edinburgh Medical Journal," are in part reprinted in the "Quarterly Journal of Inebriety," for July, 1890. Dipsomania, morphinomania, chloralism and cocaineism are the conditions considered in this installment.

L. F. B.

THE HYSTERIC MIND A CONTRACTION OF THE FIELD OF CONSCIOUSNESS.

Dr. R. W. Felkin (Edinburgh Medical Journal, May, 1890) thinks that William James' references to hysteria and hypnotism and the recollection of the origin of disease contain a hint as to a method of investigation and treat-

ment. In an article called the "Hidden Self" (Scribner's Magazine, March, 1890), James states it as his belief that a waking hysteric is in the same condition as a well person in a hypnotic trance, and also that the hysterical mind is a contraction of the field of consciousness; that is to say, the hysterical person either forgets or is unable to attend to two things at once, and so may ignore an eye or a hand, may not see but hear, may speak but not feel, etc. If motor sense is lost, the patient must perforce define movements to his mind in visual terms. James thinks that the hysterical crisis may be often based upon previous experience; and he refers to the case of a patient named Lucie, who had a fright when a child, and once was confined some time in a dark room on account of eye trouble. The girl was addicted to somnambulism. When an attack of hysteria comes on, she experiences the old fright, etc. When hypnotized, she explains what happened to her when a child. James, therefore, suggests that much information regarding the origin of obscure disease may be arrived at during the hypnotic state. As a memory can be recalled, so a memory can be obliterated by hypnotism.

L. F. B.

HYPNOTISM AND THE BRITISH MEDICAL ASSOCIATION.

In July, 1890, the British Medical Association discussed the subject of hypnotism in therapeutics. (See British Medical Journal, Aug. 23, 1890.) At the close, the president, Dr. Needham, congratulated the section upon the scientific spirit in which the demonstrations had been made, and upon the admirable tone of the discussion. He inferred from remarks made by the members that there was an evident desire not to dismiss the matter in so summary a fashion, and asked the association to state whether they were in favor of a scientific inquiry into the phenomena of hypnotism. The reply was unanimously in favor of an investigation. Dr. Gairdner then said: "To decide if anything tangible can result from this discussion, and if the British Medical Association can do anything in the matter, I beg to propose the following resolutions: I. That this section protests in the strongest manner against the public exhibition before unscientific and miscellaneous audiences, and for purposes of gain and amusement, of the phenomena of hypnotism—a practice which, in the opinion of this meeting, is antagonistic to public morality. And, II., that the

subject of hypnotism should be considered by a committee of medical men, with the object of endeavoring to ascertain the true knowledge of its phenomena, and the propriety or otherwise and the value of its use in the treatment of disease; and that the council of the British Medical Association be requested to sanction the appointment of a committee for this purpose." These resolutions were carried unanimously and the following members nominated for the committee: Needham, Gairdner, Hack Tuke, Clouston, Yellowlees, Norman, Kingsbury, Ross, Drummond, Suckling, Broadbent, and Outtersen Wood.

At this meeting in question, Dr. Norman Kerr said he believed that in medicine every one at some period had to get through the neurotic epidemic of mesmerism or hypnotism, like measles. He accepted practically all the alleged hypnotic phenomena as facts, but in hypnosis saw only a disordered cerebral state, an abnormal psychical condition, with exaltation of receptivity and energy. Hypnosis, said Dr. Kerr, is a departure from health, a diseased state, a true neurosis, embracing the lethargic, cataleptic and somnambulistic states. It is not desirable that the control of any one's thoughts and actions should be in the keeping of a fallible fellow mortal. The after-effect of hypnotism is a disturbance of mental balance, a dissipation of nerve energy and nerve exhaustion. Other remedies are less perilous in their sequelæ.

Dr. Hack Tuke said there were two aspects of hypnotism which must be kept distinct: one, the value of the study of the phenomena; and the other, the value of hypnotism as a therapeutic agent. The man who failed to recognize the first in its importance must be hopelessly dense. As to hypnotism as a therapeutic agent, its range seemed limited—very limited. The attempt to put an extinguisher upon researches into the matter, or the attempt to prevent physicians employing hypnotism, had already thrown this agent into the hands of charlatans. Use it, and report the results, whether favorable or not.

Dr. Clifford Allbutt, while admiring Dr. Kerr's rhetoric and moral warmth, considered his words without permanent weight, as there were no facts in his paper. Dr. Kerr apparently disapproved of facts in this department; yet some facts might have been produced or referred to which it was boldly said must, and quite possibly might, result from the use of hypnotism. Another objection, not very forcible, Dr. Allbutt thought, is that hypnotism is said to exchange one morbid state for another. Well, why not, if

the second morbid state is more tolerable than the first? Then, again, it was objected that to annul pain by hypnotism is false therapeutics, because pain is a message from a diseased part, and ought not to be concealed. But pain tells its message quickly, and after that the sooner it is suppressed the better. Symptomatic treatment is thankfully resorted to when removal of the cause is impossible or a matter of time. The objection that hypnotism must fail in the case of inebriates because it cannot repair the parts of the brain that are damaged by alcohol, is not valid; for, if the habit can be arrested by suggestion, degeneration may also be arrested, and in time may heal itself. For scrupulous men to refrain from studying hypnotic phenomena is to hand them over to knaves who will use them for base purposes. L. F. B.

A NEW THEORY ABOUT TEMPERAMENTS.

In the "New York Medical Journal," Oct. 18, 1890, Dr. Paul Gibier has a paper with this title. Great importance was attached by the ancients to the study of temperaments. Nowadays, while recognizing that the physiological basis varies with individuals, sufficient importance does not seem to be attached to what was formerly designated as the "composition of humors." The human body inherits to a large extent the basis from which a malady takes its development rather than the malady itself. Hence the importance of knowing a patient's composition. Numerous experiments made upon patients, in the clinic and laboratory, furnish data upon which Dr. Gibier classifies temperaments or constitutions of the human body into

- I. The alkaline temperament.
- II. The acid temperament.
- III. The neutral temperament.

All substances, from a chemical standpoint, are alkaline, acid, or neutral. Why not also those living animal substances whose functions are so varied? L. F. B.

ANTHROPOMETRIC STUDY OF PROSTITUTES AND FEMALE THIEVES.

Such is the title of Dr. Pauline Tarnowsky's book, published by the Bureaus du Progrès Médical, and reviewed in the "American Journal of Insanity." It is the study of one hundred and fifty prostitutes, and one hundred female thieves of the chronic type, compared with one hundred and fifty women of good character. Of the latter, one hundred were illiterate peasants and the other educated

women. Environment, ancestry, the mental and moral condition of the prostitutes and thieves, received careful consideration. All the defects and normal standards were of pure Russian race. The author, like all women of observation and reason, realizes that prostitutes, as a rule, follow their calling from preference, and return to it voluntarily even when provided with the means of earning a respectable and comfortable living. This abnormal choice seemed to indicate a mental defect, associated with defective physical development. Facts appear to substantiate this assumption. The average size of the cranium was found to be less and the face larger than among women of orderly lives. The average height was slightly less, and there were physical signs of degeneration, such as asymmetry of the face, malformations of the cranium and the face, and of the ears, defective dentition, vaulted palate, etc. As to ancestry, intemperance existed in the parents of one hundred and twenty-six, and both parents of fifty were drunkards. Six per cent. had epileptic and three per cent. insane parents. Hereditary syphilis existed in four per cent. Intellectually, the prostitutes were below the standard of normal womanhood. The habitual thieves were found to be somewhat superior to prostitutes, mentally and physically. They occupied a middle position between them and orderly women, and were somewhat taller than the latter. Intemperance, epilepsy and insanity existed in the parents, in the proportion of forty-nine per cent., four per cent. and two per cent. Of these women, three-quarters of their number presented two or more signs of physical degeneration. L. F. B.

A VIEW OF HYPNOTISM.

Dr. R. W. Felkin, in the "Edinburgh Medical Journal," in his paper on Hypnotism, or Psycho-Therapeutics, thus summarizes Moll's ideas in regard to the production of hypnotism: We see how easily a suggestion given to a hypnotized person is received. A movement is suggested; it is at once made. An objective idea is suggested, and the necessary delusion is produced. In ordinary life suggestions are received and acted upon; but when hypnotized, a person is more impressed, because the hypnotizer assures him of the expected result. The newest researches in psychology lead one to expect this. When a person is hypnotized, there is a paralysis of inhibition produced. In other words, the person hypnotized is only capable of passive observation. He is unable to correct by other senses an impression

placed before him by the hypnotizer—*e. g.*, a hypnotized person is told that he sees a dog; he believes he does see it because he cannot use his eyes to correct the imagination of a dog called to his consciousness by the spoken word. Active consciousness is inhibited; passive consciousness is awake. When out of several impressions one is chosen by the action of the will, and observation is fixed upon that one, there is an active observation; when out of several impressions one forces itself upon the consciousness to the obliteration of all others, then there is only passive consciousness.

L. F. B.

MOTOR SYMPTOMS OF THE OCULAR APPARATUS.

Dr. C. H. Oliver, in an original paper in the "American Medical Sciences," announces the result of four years' work at the State Hospital for the Insane, at Norristown, Pa.; made an analysis of the motor symptoms and conditions of the ocular apparatus as observed in imbecility, epilepsy, and the second stage of general paralysis of the insane. His conclusions were: (1) That in idiopathic epilepsy of the male adult, even when the stage of dementia has been reached, both the intra- and the extra-ocular motor groupings seemed, as a rule, to remain unimpaired, both as to innervation and to active impulse, although in some instances curious innervations and limitations of action seem to exist. (2) That in the lower grades of imbecility, as seen in the male adult, which have resulted from malformations or disease of a minor degree than that producing so-called idiocy that have supervened in infancy or occurred before birth, both the intra- and the extra-ocular muscle grouping, as a rule, remains unaffected, both as to innervation and as to proper action; in fact, they seem ordinarily to retain their original condition without any pronounced indications of wear and tear—a condition that most probably evidenced very little abuse of a delicately poised muscular apparatus. (3) That in the second stage of paresis, as seen in the male, both the intra- and extra-ocular motor groups are in all instances more or less paretic, as evidenced by inequalities and irregularities of pupillary areas, with peculiarities in irides movements and in less ciliary tone and power, as well as by extra-ocular insufficiencies and ataxic nystagmic motion, all indicative of imperfect muscle innervation and inadequate muscle action.

B.M.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting, December 2, 1890.

The President, Dr. LANDON CARTER GRAY, in the chair.

SPECIMENS OF PACHYMENINGITIS INTERNA HÆMORRHAGICA.

Dr. F. FERGUSON presented three specimens of this condition. After giving the histories in detail, he stated that they represented only a small part of a considerable number which he trusted he should be allowed to bring before the Society on some future occasion, when he proposed to go more fully into the subject and give the conclusions he had drawn from a study of his cases.

THE PATHOLOGICAL ANATOMY OF TIC- DOULOUREUX.

This was the subject of a paper by Dr. C. L. DANA. He said that inveterate trigeminal neuralgias were usually caused by local disease, such as bony tumors, aneurisms or syphilitic exudations; but the ordinary cases of tic-douloureux, occurring after middle life, affecting chiefly the second branch of the trigeminus, were not due to such causes. Little was known of its anatomy, it being generally believed, that there was no especial change in the nerve or its centres, and that the disease was a neurosis. Anstie was of the opinion that tic and other chronic neuralgias were due to atrophic changes in the root and sensory ganglia. Dr. De Schweinitz had recently reported one case in which he had found evidence of some degenerative inflammation in the nerve. Recently the Gasserian ganglion, removed in a case of tic, was found to show degenerative atrophy. The author was confident that neuritis and degenerative changes in the nerve were not the usual and ordinary conditions in tic-douloureux, for in almost all of the cases, no matter how old, no permanent anæsthesia

occurred. On the other hand, in cases of progressive trigeminal anæsthesia, due to degenerative neuritis, there had been but little pain. The question arose, therefore, whether there was any tangible cause of the condition. The author's proposition was that many cases were due to an obliterating arteritis of the nutrient vessels of the nerve. His reasons for these views were:

1. That the disease occurred only at a time of life when degenerative changes in the arteries began.

2. That it affected chiefly and primarily one of the terminal branches of the internal maxillary. If it extended or recurred, it involved the inferior dental. It rarely affected seriously the supra-orbital nerve, which was supplied by a branch of the internal carotid. Hence the disease followed a certain fixed vascular distribution.

3. That he had examined four superior maxillary nerves, removed in typical cases of tic-douloureux; in none were there any noteworthy changes in the nerves. In three of them striking evidence of arterial disease was found. In the fourth case no blood-vessel was present in the specimen.

4. The view that an obliterating arteritis was a factor in this disease was strengthened by therapeutical experience. Nitro-glycerine would sometimes relieve pain instantly and prevent a return for a long period of time. Aconite, which was so useful in this disease, also lowered blood-tension; while potassium iodide, which sometimes favorably modified arterial disease, was occasionally useful in tic.

5. That there was unquestionable evidence that removal of the peripheral nerves sometimes cured tic entirely, and hence the disease was peripheral and due to some local peripheral irritation.

6. Certain authors had recently stated that by a new method of injection they had been able to discover a closer and more extensive relationship between the nerve-trunks and blood-vessels than had hitherto been known, and they suggested in their conclusions that disturbances in blood supply might be a serious factor in causing neuralgia.

The author then gave the histories of a number of cases which he considered typically corroborative of his theory. He adduced positive facts that the trigeminus and its roots, and even nuclei and deep roots, were not diseased even in old and typical cases. In all cases where the vessels were examined, striking disease was found to be present. Circumstantial evidence was found by therapeutic experiment and the general etiology and anatomical distribution of the

vessels and of the pains. His argument, he said, was defective, in that he had not examined the infra-orbital arteries of healthy persons of from forty to sixty years of age. But this was not much of a defect, for the reason that with obliterating arteritis there must be some specific vulnerability of the nerve centres. At present it seemed to the author that it would be pretty safe for him to assert that most of the typical cases of *tic-douloureux* occurring after middle life were due to an obliterating arteritis of the infra-orbital or inferior dental artery, terminal branches of the external carotid, plus some peculiar vulnerability of the central nervous system.

DISCUSSION.

In reply to a question by Dr. Ferguson, Dr. DANA said that he had not been aware of the existence of any renal symptoms or of any changes in the temporal or renal arteries in any of the cases he had mentioned. He thought that in such typical cases of chronic neuralgias—as, for instance, sciatica—evidences of arterial changes would be found, if sought for.

THE PRESIDENT thought the theory that Dr. Dana had advanced well worthy of consideration. No doubt, nervous phenomena were met with in which great pain was present, but which led to no changes in the nerve bundles.

Dr. DANA said that he had been struck with the effect produced by the exhibition of nitro-glycerine in these cases. This drug was not an anodyne, but its action was essentially upon the circulation.

A NEW SYSTEM OF THERAPEUTIC ADMINISTRATION OF STATIC ELECTRICITY.

Dr. WILLIAM JAMES MORTON read a paper with this title. His new system comprised the development by an influence machine of a rapidly interrupted and graduated current, by means of a circuit-breaker, introduced into a circuit with and without condensers, and in the medical application of this current without and within the human body, by moistened sponge or other electrodes, just as in the case of the ordinary galvanic and faradic currents. It involved the removal of the spark, in itself more or less disagreeable and painful and often difficult to localize, especially about the face and neck, away from the patient's body, and yet retaining all the physiological effects of the kinetic or current part of the circuit. The spark was no

longer a direct feature of the administration ; it occurred at some distant part of the necessarily closed circuit, and in modified form now became mainly a regulator for timing the discharge of the equalizing potentials. The circuit-breaker consisted of a pair of metallic ball electrodes, introduced at any point of the circuit, having a narrow air space between the balls ; the circuit "makes" when a small spark overcomes the resistance of the intervening air, and "breaks" when it failed to do so, and the current was due to rapidly successive equalizations of the differences of potential of oppositely charged condensers, whether prime conductors or with the addition of Leyden jars. The circuit-breaker served—

1. To afford time, infinitely brief, to the prime conductors and condensers, if used, to charge.

2. To regulate the frequency of the discharge and collaterally the frequency of the succession of transient currents, so that their aggregate might be classed as a steady current.

3. To determine the strength of the current.

This latter might be varied at will and with the utmost nicety, from a just perceptible to a most powerful effect. The spark circuit-breaker practically represented the vibrator in the primary of an induction coil, the specific inductive capacity of the air replacing the spring and its magnetic attractability.

In describing the physical properties of the Franklinic interrupted current, the author said that it was neither a sudden and transient form, spark or shock, nor an ineffective continuous flow, but that it was a succession of relatively small sudden discharges. A single spark would produce but a single contraction, instantly recovered from ; a continuous flow, no effect. The Franklinic interrupted produced the effect of physiological tetanus. It therefore stood distinct and by itself, as capable of producing a result unattainable by either of the forms, galvanic or faradic. Applied to a motor point, the Franklinic interrupted current produced most vivid and persistent muscular contraction with a minimum of pain ; applied further back on the trunk of a motor nerve, it threw large groups of muscles into contraction. The contraction was peculiarly painless as compared with that of faradic coils, and the influence was remarkably diffusive. Accompanying a contraction of a large group of muscles was a peculiar sensation of lightness and buoyancy of the member. It was applicable to every form of muscular paralysis, for there was no practical stimulus to

nerve and muscle except the electric, and none more energetic than this form of it. Its effects upon the Hallerian irritability of the muscular tissue included an effect upon the lymphatics, and to this might doubtless be referred many clinical results of relief, as in lumbago and all forms of muscular rheumatism, sub-acute and chronic rheumatic affections of joints, ovarian or pelvic pain, sciatica or other neuralgias.

One of the characteristics of this current was its power of relieving pain. Gynæcologically this system of conveying the current within the cavities of the body opened out a wide and promising field of clinical results. From a very considerable experience the author was satisfied that this current penetrated more deeply into the human body than did that of the galvanic.

In conclusion, the new points brought forward were :

1. The generalizing of what the author had announced as an isolated fact in 1881, that a regulated interruption in the otherwise inoperative circuit of a Holtz machine would produce in another part of a current adapted to electrotherapeutic practice. This current was now designated the Franklinic interrupted current. It included the adaptation of the parts of a Holtz machine to produce the results.

2. A new electrode combining this current with the various terminals.

3. The practice of introducing Franklinic electricity in current form into the interior cavities of the human body.

DISCUSSION.

Dr. DANA thought that the author of the paper was to be congratulated upon the originality and value of his method. A good deal could be said in corroboration as to the value of the static current. If he must criticise, he thought that, in testing for the reaction of degeneration, the static current stood in the same relation as the faradic, and that the response was last to the galvanic current. If Dr. Morton had made any physiological experiments which disproved this the speaker would be glad to know it. He thought that they all regretted the statement made as to the penetrating power of this current, or rather that it had been made without proof being adduced. His own experience would warrant the conclusion that the static was by no means as penetrating as the galvanic current.

Dr. A. H. GOELET said that, with only limited experience with the static method, he thought that it might be employed with advantage where the object was to produce

marked muscular contractions without the pain to which the faradic too often gave rise.

THE PRESIDENT said that he had as yet failed to see the advantages which the static current had over the galvanic, or at least the galvanic in combination with the faradic. The machine for its administration was very costly and difficult to learn in all of its modifications. While there might be points in which it might be more advantageously employed than the faradic machine, he could not see how this was true in reference to the galvanic. In many cases he had employed galvanic electricity in ovarian troubles with marked success, in which the results were indubitable. He did not think that this could be said of the static machine. He did not wish to be considered captious in his criticism, for he made use of the static machine in his office, but would merely ask Dr. Morton wherein lay the alleged advantages.

Dr. MORTON said that he had purposely refrained from alluding to static electricity as a diagnostic agent in testing the reaction of degeneration, but as to its penetrability he had produced nausea on application to the back of the neck, and had produced contractions in sets of muscles by the current applied over a nerve trunk. Applied to a motor point, the contractions were of course marked. He would like to know if some one could give any further demonstration that would show a deeper penetration by the galvanic current. As an analgesic, he thought that a series of test cases would demonstrate that it had equal claims with the galvanic current, and that it ought to take average working rank in electro-therapeutics. He thought that static electricity would be better appreciated if the subject was more thoroughly understood.

HOMONYMOUS HEMIOPIC HALLUCINATIONS.

Dr. FREDERICK PETERSON read a paper with this title. In a previous contribution on this subject the author had described a case of chronic delusional insanity, or paranoia, in which the visual hallucinations had the remarkable peculiarity of always appearing in the right field. There was no hemianopsia present. Dr. Seguin, in his "Clinical Study of Lateral Hemianopsia," had detailed a case of embolism of the left occipital artery, in a woman, aged thirty-four, who, at the close of the third confinement, just after the child was born, had a peculiar attack, in which she experienced a snap or sudden pain in the left temple, and

felt giddy. For several days afterward she had severe pain in the head, and could not see objects to her right. At the same time that she first noticed darkness to her right, there were a few simple hallucinations in the dark half field. Dr. Van Duyn, of Syracuse, had sent the speaker notes of a case presenting the phenomena of hallucinations occurring in the dark fields of hemianopsia. One week after the occurrence of the blindness the patient began to see, in the dark field, cats and dogs, and children arranging themselves in rows, and forming processions. This had continued without any variation or interruption, except during sleep, for four weeks. After the fourth week the hallucinations had disappeared quite suddenly, and had never returned. The hemiopia continued. Hemianopsia had been frequently observed by various authors as occurring in epilepsy. A case of this kind had recently come under the speaker's observation. A boy, aged eleven, had had for two years an attack of *grand mal* about once a week. He had always had a visual aura of a white star shining to the left.

While hemianopsia, *muscæ volatantes*, etc., were frequent precursors of migraine, the appearance of hemiopic spectra in the dark portions of the visual field was rather infrequent. By far the best contributions to the subject of homonymous hemiopic hallucinations, in connection with organic disease of the brain, were those of Henschen, in his remarkable work recently published. This author had stated as his opinion that the physiological basis for these phenomena must of course lie in the irritation of the cortex of the occipital lobe. The speaker said that in this connection he could not do better than quote from a letter of Dr. Seguin's, who had written as follows:

"As regards the hemiopic auræ of epilepsy and migraine, they have been a great deal mentioned, but I doubt if the true theory of the projection has yet been published. Hammond, some years ago, read a paper on thalamic epilepsy, in which he attributed hemiopic auræ to irritation of the thalamus. Several of us held out for a cortical irritation, but we did not then know the visual centre. However, I think that it does not follow that the irritation in such cases is of the cuneus. This is undoubtedly a positive centre—a sort of first cortical station—for visual impressions; but there are many reasons for thinking that residua of visual impressions are redistributed and stored in various gyri of the occipital lobe, so that while destruction of the cuneus and of the gyrus just below must abolish half of vision, it does not follow that all projections are due to an irritation

of this small part; they may be due to irritation of various parts of the occipital cortex, on one side for hemiopic auræ."

As to the hemianopsia of migraine, Dr. Seguin thought that "spasm of the occipital artery, supplying the cuneus on one side, may quite surely be assumed to occur." The author was of the opinion that partial anæmia in the cortex, due to the same cause, might account for the hallucinatory symptoms in the same disease. While irritation from organic lesions and from vascular spasm made clear the origin of these phenomena in most of the cases cited, the manner of their production in a case of paranoia, such as the speaker had previously described, was rather more difficult to explain. In his own case there was no reason to suspect organic disease of any kind; there was no hemianopsia, and the hallucinations had continued for months. This would indicate a mild chronic nutritive disturbance in the cortex, without periodicity, as in migraine and epilepsy, and not limited in duration by the advance or recession of some coarse lesion, as in organic cases.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, November 24, 1890.

The President, Dr. H. C. WOOD, in the chair.

Dr. METTLER read a paper. See page 19.

DISCUSSION.

Dr. FRANCIS X. DERCUM.—This is certainly an interesting and valuable paper. The doctor has raised the question—very justly, I think—in regard to the relation of the semicircular canals to vertigo. The ordinary explanation of vertigo has always been to me a doubtful one. I never could reconcile it with what we know of the morphology of the semicircular canals. Some years ago I made a study of the comparative anatomy of these structures in order to determine what light such study could throw upon their function.

They bear a distinct relation to the lateral line organs of fishes, the nerve hills of the latter being identical in structure with the maculæ acusticæ. Just as the inclosure

of these nerve hills in tubes seems to have for its object the gaining of distinctness and definiteness of impression, so the inclosure of the maculæ within the semicircular canals seems to have the same object. It is significant that each macula is situated at the *end* of a canal, and this suggests that the canal is a kind of conduit to carry off vibrations after they have made their impression on the macula; and, further, that if interference of vibration occurs, it occurs at a point *distant from the macula*. Confusion of sound is thus avoided. The inference from physiological experiment, that these structures have for their special object the maintenance of equilibrium, has always seemed to me open to most serious objections.

Dr. J. P. CROZER GRIFFITH.—I would ask whether the asthmatic attacks to which reference has been made preceded the attack of vertigo, or were of recent occurrence. Are they still present? Does the vertigo continue?

Dr. METTLER.—The asthmatic attacks began with the attack of rheumatism in 1876, and have been present ever since. The vertigo disappeared in about one week after I first saw her. There is now nothing the matter with the woman except the heart trouble, the asthmatic attacks and the total loss of hearing on one side.

Asylum Notes.

At a Special Session of the State Commission in Lunacy, held at the Capitol, in the city of Albany, on the eighteenth day of November, 1890.

It having been made to appear that

(a) A custom has long prevailed, without authority of law, although sanctioned by long usage, in various institutions in the State for the care and treatment of the insane, of permitting patients to temporarily leave the institutions to visit friends, or to go out "on trial," for a time not fixed and entered on the books of the institutions and extending over indefinite periods, sometimes even more than a year; and

It having been made to appear that

(b) Due diligence has not always been exercised to discover the whereabouts of insane patients who have escaped, and to promptly secure their return, long intervals often elapsing between the date of escape and return; and

(c) Patients suffering from insanity being liable to recover at any time, and deprivation of liberty being justifiable only so long as insanity exists, and where long intervals are permitted to elapse between the date of parole or escape and the date of return of patients to an institution, the possibility may arise of their being re-confined when not insane, by reason of recovery during such interval; it is hereby

ORDERED: 1. That no insane patient while in the custody of an institution, be permitted to go upon parole who in the judgment of the Medical Superintendent is homicidal, suicidal, destructive or dangerous either to himself or others.

2. That no parole be granted for a greater period than thirty days, exclusive of the date thereof, and that the following entries relating to said parole be made in the patient's history in the "case book": Date of parole, place or places where patient may go, and, if paroled to the care of a person, the name and residence of such person, and the date when such parole is to end.

3. That upon the escape of a patient, prompt and vigorous measures be taken to secure his return; relatives or other persons responsible for the commitment of such person must immediately be notified in writing, and where possible, by telegraph, and the date of the escape and proceedings taken in relation thereto must be entered in the "case book" at once.

4. A patient who has been paroled, or who has escaped, if not returned to the institution on the thirtieth day, exclusive of the date of parole or escape, must be discharged from the books upon that day, and thereafter a notice of such discharge by parole or escape must be forwarded to the Commission, but not otherwise, and such patient must not be re-admitted except upon a new medical certificate of lunacy, the cost of which and of the return of the patient (except in the case of private institutions by special agreement) must be borne by the institution.

5. But nothing in this order contained shall be construed to justify the relaxation of diligence at the expiration of thirty days from the date of escape to secure the appre-

hension of an escaped patient, nor, in the case of a patient confined in a State Hospital, shall this order be held to justify charging the highest rate by reason of a return upon a new medical certificate made necessary by absence for a greater period than thirty days upon a parole or escape, and the time of such absence shall be estimated as a part of the time during which the highest rate can be charged if the escape or parole occurred during such time.

6. Nothing in this order contained shall be construed to permit a patient held on a "criminal order" to be paroled, or discharged in case of escape.

By the Commission :

T. E. MCGARR,
Secretary.

At a Special Session of the State Commission in Lunacy, held at the Capitol, in the city of Albany, on the eighteenth day of November, 1890.

ORDERED : 1. That each insane patient be permitted to write to some relative or friend once in two weeks, and oftener if necessary, in the discretion of the Medical Superintendent. In the case of patients unable for any cause to write, the Medical Superintendent must direct some proper person to write for such patients at suitable intervals, if they so desire. All letters must be forwarded at once, unless they are obscene, profane, illegible or too incoherent to be understood, and the postage must be furnished by the institution, if relatives or friends are unable to provide the same.

2. All letters detained because of obscenity, profanity or for other reasons, must be forwarded at once to the office of the State Commission in Lunacy, and reasons for the detention must be briefly stated in each case by endorsement upon the envelope.

3. All letters addressed to the Governor, Attorney-General, Judges of Courts of Record, District Attorneys or the State Commissioners in Lunacy must be forwarded at once, without examination.

By the Commission :

T. E. MCGARR,
Secretary.

Miscellany.

BROOKLYN SOCIETY FOR NEUROLOGY.

In view of the evident opportunity for a successful local association of this character, an invitation was sent out early last spring to the physicians known to be especially interested in this subject. In response to this, on the evening of April 14, 1890, Drs. Charles Corey, John C. Shaw, William Browning, T. M. Lloyd, C. F. Barker and Thomas L. Wells met at the residence of Dr. Shaw, and organized "The Brooklyn Society for Neurology." Dr. Corey was elected president and Dr. Wells secretary. The more recent accessions include Drs. John A. Arnold, A. T. Bristow and A. J. Kene.

The meetings are held regularly in the building of the Kings County Medical Society, at 356 Bridge Street, on the second Wednesday of each month, excepting July and August.

At the December meeting the present officers were re-elected for the ensuing year.

COMPETITIVE EXAMINATION.

An open competitive examination for the positions of junior assistant physicians in the State hospitals and asylums will be held at the office of the Civil Service Commission, Albany, N. Y., Thursday, Jan. 29, 1891, commencing at 10 o'clock, A.M.

Applicants must be graduates of a legally incorporated medical college, and must have had one year's experience in a general hospital or three years' experience in the practice of medicine.

Application blank and other information may be had by addressing the Secretary of the New York Civil Service Commission, Albany, N. Y.

Albany, N. Y., Dec. 27, 1890.

JOHN B. RILEY,

Chief Examiner.

REMOVAL.

Dr. Irving C. Rosse, of Washington, D. C., has removed his office to 1701 H Street, N. W. Practice limited to nervous and mental diseases. Hours, 10 to 12:30 and 4 to 5.

Book Reviews.

THE REVIEW OF INSANITY AND NERVOUS DISEASES.

Edited by James H. McBride, M.D.

The first number of this "Quarterly Compendium of the Current Literature of Neurology and Psychiatry" is undoubtedly a praiseworthy commencement, and if, as its editor claims, the Review is to be a permanency, and we most sincerely trust it will, we would like to see its workers as enthusiastic in its future numbers. Dr. McBride is to be congratulated in gathering around him such a capable corps of associate editors and translators. The arrangement of the abstracts into departments is to be commended and the selections are interesting and the work well done. The prospectus, in the editor's own words, will explain the objects of this periodical.

"Original articles will occasionally appear, and will be written by specialists; but it is the intention to have not more than one in any issue. While this periodical will practically review the literature of the specialties, there must of necessity be a choice made in selecting articles, for not all can be noticed. Preference will, therefore, be shown to literature that has an immediate practical bearing, to the neglect, if necessary of technical and speculative productions, however meritorious. It may be well to state that the Review will not depend for existence upon its subscription list, and that it is not an experiment, but from the first may be considered a permanency."

THE PHYSICIAN'S VISITING LIST FOR 1891. P. Blakiston, Son & Co. Philadelphia.

It is not necessary to dilate upon the advantages of this list to a physician who endeavors to be methodical in the correctly keeping account of his visits, the making of and memoranda of his engagements. The lists contain valuable suggestions in times of emergency and act as a reminder as well in time of need as to dosage of new and rare drugs. This year it comes from the publishers' hands in compact form and is very neat in appearance.

A COMPEND OF HUMAN ANATOMY: Including the Anatomy of the Viscera. By Samuel O. L. Potter, M.D. Quiz Compend Series, No. 1. Fifth edition. P. Blakiston, Son & Co.

This little work, which has so successfully gone through four editions, has been somewhat enlarged, and especially so by an appendix of a complete set of tables and plates of the arteries, the cranial and spinal nerves and plexuses, and the sympathetic nervous sys-

tem. This appendix is certainly of great value and is remarkably clear, concise and well executed. This part will be of great service to every neurologist desiring to recapitulate his anatomy. Everything as to detail of the anastomosis and the derivation of the nerves is clearly depicted. The plates are unusually well executed.

BOOKS, PAMPHLETS, ETC., RECEIVED.

DESCRIPTIVE PAMPHLET OF THE NEW JERSEY HOME FOR THE EDUCATION AND CARE OF FEEBLE-MINDED CHILDREN.

TWENTY-SEVENTH ANNUAL REPORT OF THE NEW YORK SOCIETY FOR THE RELIEF OF THE RUPTURED AND CRIPPLED. Year ending September 30th, 1890.

THE USE OF ALCOHOLIC DRINKS. H. C. Beers.

ON THE PATHOLOGICAL VALUE OF GUSSERIAN, SENTICULAR, SPINAL AND CARDIAC GANGLIA. By W. Hale White, M.D. Reprint.

ABUSE OF A GREAT CHARITY. By Geo. M. Gould, M.D. Reprint.

FORTIETH ANNUAL REPORT OF THE STATE LUNATIC HOSPITAL AT HARRISBURG, PENN. Year ending September 30th, 1890.

REPORT OF THE SURGEON-GENERAL OF THE ARMY TO THE SECRETARY OF WAR. For the fiscal year ending June 30th, 1890.

REPORT OF THE BOARD OF TRUSTEES OF THE EASTERN MICHIGAN ASYLUM AT PONTIAC. For the biennial period ending June 30th, 1890.

A CASE OF ACUTE PETRO-BULBAR NEURITIS. By C. M. Hausen, M.D. Reprint.

THE TREATMENT OF MORPHINE DISEASE. By J. B. Matteson, M.D. Reprint.

NERVOUS AND MENTAL DISEASES OBSERVED IN COLORADO. By J. T. Eskeridge, M.D.

EXPLORATORY PUNCTURE OF THE FEMALE PELVIC ORGANS. By Geo. M. Edebohls, M.D. Reprint.

SOME PRACTICAL CONSIDERATIONS ON THE NATURE AND INDUCTION OF THE HYPNOTIC STATE. By J. Leonard Corning, M.D. Reprint.

SOME MANIFESTATIONS OF RACHITUS NOT ALWAYS ASSOCIATED WITH SEVERE BONE CHANGES. By Walter Lester Carr, M.D. Reprint.

- SOME CONSIDERATIONS IN REGARD TO ACUTE OBSTRUCTIVE DISEASES OF THE LUNGS. By Andrew H. Smith, M.D. Reprint.
- BIENNIAL REPORT OF THE OFFICERS OF THE VERMONT ASYLUM FOR THE INSANE. Period ending July 31, 1890.
- THE TIME RELATIONS OF MENTAL PHENOMENA. By Joseph Jastrow. (Fact and Theory Papers.) N. D. C. Hodges, publisher.
- SYNOPSIS OF A COURSE IN MICROSCOPY FOR PHARMACISTS. By H. M. Whelpley, M.D., F.R.M.S.
- ON THE COINCIDENT GEOGRAPHICAL DISTRIBUTION OF TUBERCULOSIS AND DAIRY CATTLE. By E. F. Brush, M.D. Reprint.
- CONSANGUINEOUS BREEDING IN ITS RELATIONS TO SCROFULA AND TUBERCULOSIS. By E. F. Brush, M.D. Reprint.
- THE RELATIONSHIP EXISTING BETWEEN HUMAN AND BOVINE TUBERCULOSIS. By E. F. Brush, M.D. Reprint.
- THE PATHOLOGY OF THE HUMAN SYMPATHETIC SYSTEM OF NERVES. By W. Hale White, M.D. Reprint. Guy's Hospital Reports.
- ON THOMSEN'S DISEASE. By W. Hale White, M.D. Reprint. Guy's Hospital Reports.
- DIAGNOSIS AND OPERATIVE TREATMENT OF GUNSHOT WOUNDS OF THE STOMACH AND INTESTINES. By N. Secus, M.D. Reprint.
- THREE TYPES OF CEREBRAL SYPHILIS PRODUCING MENTAL DISEASE. By C. M. Hay, M.D. Reprint.
- SUPPURATING ENDOTHELIOMA, MYOFIBROMA, IN A CONDITION OF NECROBOSIS: Remarks on the Treatment of the Pedicle, etc. By Mary Dixon Jones, M.D. Reprint.
- FOURTH ANNUAL REPORT OF THE TRAINING-SCHOOL FOR NURSES CONNECTED WITH THE POST GRADUATE MEDICAL SCHOOL AND HOSPITAL, 1890.
- BULLETIN OF THE AGRICULTURAL EXPERIMENT STATION OF CORNELL UNIVERSITY, NOS. XXI. AND XXII.
- REPORT ON THE EXAMINATION OF ONE HUNDRED BRAINS OF FEEBLE-MINDED CHILDREN. By A. W. Wilmarth, M.D. Reprint.
- SUBJECTIVE DELUSIONS, OR THE SIGNIFICANCE OF CERTAIN SYMPTOMS IN MENTAL DISEASE. By Joseph Draper, M.D. Reprint.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

A GROUP OF CASES OF SYSTEM SCLEROSES OF THE SPINAL CORD, ASSOCIATED WITH DIFFUSE COLLATERAL DEGENERATION: OCCURRING IN ENFEEBLED PERSONS PAST MIDDLE LIFE, AND ESPECIALLY IN WOMEN; STUDIED WITH PARTICULAR REFERENCE TO ETIOLOGY.¹

By JAMES J. PUTNAM, M.D., OF BOSTON.

WITHIN the past few years I have seen eight fatal cases for which the diagnosis indicated in the title of this paper seemed to be justified, besides a number of others, of apparently similar kind, which are still in progress or have passed out of my observation. Two cases recently seen, and belonging in this same category, seemed to have been due, in part, to the recent epidemic of influenza. In four instances I have been able to obtain post-mortem examinations, and the conditions of the spinal cords is indicated in the plates that accompany this paper, which were drawn with the camera lucida by Dr. C. D. Young of Rochester, N. Y.

These cases were not all of just the same clinical type, but they present enough points of likeness to lead me to believe that the pathological conditions above noted are of more common occurrence than is usually believed.

The symptoms consisted, in general, of a sub-chronic, progressive impairment of both the sensory and the motor functions of all four extremities, associated after a time

¹ Read in abstract at the Annual Meeting of the American Neurological Association, 1890.

with a moderate and nearly uniform degree of diffuse wasting of the muscles, and, usually, more or less general emaciation. The fatal cases ran their course in about two—in one case four—years, and presented complete paraplegia as a pre-terminal symptom. Possibly the sclerotic changes actually antedated the symptoms, but remained for a time latent, as often happens in disorders of this class.

In three of the cases marked incoördination of movement was present, while in the rest this symptom was absent or inconspicuous. Lancinating pains were present in only one case, and in that one the motor symptoms were spastic far more than ataxic in character.

Of the eight fatal cases, all the patients but two were women; all somewhat past middle life; and almost all were, from first to last, in a condition of considerable debility. In several of them obstinate diarrhœa was a prominent symptom.

Finally, several of the patients, besides being feeble and past middle life, or both, had carried in their tissues, for a long time, small quantities of lead,¹ as proved by urine analyses; and two of them had had malaria. Neuropathic inheritance was present in some of the cases; two of the cords were abnormal in shape or structure, and two, at least, were smaller than usual.

Anatomically, morbid changes were found, to a greater or less degree, in both the motor and sensory areas of the spinal cord throughout its entire length. The medulla oblongata and pons were examined microscopically in one case and found free from material change. The sections from this part did not stain well, but it can, at least, be confidently asserted that the gross changes observed throughout the spinal cord were not present there.

In all the cases, two sets of changes in the cord are recognizable, one of older date, consisting in a relatively dense sclerosis in the posterior columns and in the lateral column (mainly confined to the pyramid tracts); and one of sub-acute character, and evidently of quite recent occurrence. This sub-acute process was, as regards the white columns,

¹ In an analogous case, now under observation, arsenic has been found in the urine in three analyses, covering a period of about two years.

partly in new tracts, partly around the borders of the more dense sclerosis, and was chiefly characterized by the perforated appearance, now familiar to every pathologist, which actually results, perhaps, from the post-mortem changes induced by hardening, but indicates a somewhat rapid destruction of nerve-tubes, with œdematous distention or destruction of the intervening septa, associated with the formation of granule cells.

In the gray horns, the degenerative change (partly recent, partly of older date) was indicated by a disintegration of nerve-cells. In certain parts of some of the cords, indeed, the almost entire destruction of nerve-cells shows that, in them, the ganglionic matter as well as the white columns had borne its full share of the brunt of the degenerative process.

To characterize still further the nature of the morbid process, it may be said that marks of acute inflammation were for the most part absent, though certain qualifications of this statement will be noted later. Even in that one of the cords where, as a cause of the terminal paraplegia, an acute softening seemed to have occurred, so that the topographical arrangement of the white and gray matter of the cord in the upper dorsal region had been almost entirely lost in a general disintegration of the structure, the absence of the signs of cell-proliferation indicated a rapid process of degeneration rather than a typical inflammation. The diseased areas in the white columns were, to be sure, crowded with granule cells, but this condition, though formerly considered as indicating inflammation, is now known to be secondary to a rapid disintegration of myeline, and impairment of circulation, and, in fact, to attend, in some degree, the processes of normal nutrition.²

It is of interest to note that the complete or nearly complete paraplegia which was present in these cases was not, except in one instance, due to any high degree of acute transverse softening in the dorsal region.

It is difficult in Case III. to see why the paraplegia occurred, the changes in the motor tracts are so slight. This

²Simon: *Arch. für Psych.*, etc., Vol. V.

lack of correspondence between symptoms of paralysis and the pathological appearances has, however, been repeatedly commented on.³

No doubt the physiological conditions of circulation in the dorsal cord, which renders it so liable to anæmia (Moxon ; Adamkiewicz) and œdema is largely responsible for the result.

More or less thickening of the pia mater, with cell-proliferation, was noticeable in three at least of the cords, but it was slight and uniform, and not associated with more than a very narrow zone of sclerosis.

Changes in the peripheral nerves were found in one case and may be suspected to have been present in the others, since the nerve-roots were more or less diseased.

The same may be said of the intervertebral ganglia, which were examined in one case.

The histories of the four fatal cases with autopsy are, briefly, as follows :

CASE I. is that of a woman 58 years of age, but appearing much older. Her mother had a tremor (probably senile) for some years before her death ; and her grandfather is said to have become paralyzed somewhat after the manner of the patient herself.

The patient had three children, two of them sons, and in good health, while the third, a daughter, had Pott's disease, and was dwarfed, but intelligent. The patient had had a troubled life, and may have contracted syphilis from a dissolute husband, though the only sign of it was a temporary loss of hair when she was 27 years old.

For six years she had suffered from exhausting and long-continued attacks of diarrhœa, which followed her to the last. Three years before her death her skin began to darken in the normally pigmented areas, and, finally, all over, so that when I saw her, which was in consultation with Dr. M. A. Morris, of Charlestown,⁴ her areolæ were almost black, while the rest of the skin varied from a light brown to a dark chocolate, except that her face and lips were pale, her diarrhœa

³ See Strumpell : *Arch. fur Psych.*, etc., XVII., 226.

⁴ To whom for his many courtesies I desire to express my sincere thanks.

having reduced her strength and made her excessively anæmic. The face was covered with epidermal scales and exudation. In temperament she was irritable, eccentric, and wanting in self-control, and showed an indifference and unreasonableness mixed with cunning which, together with the fact that, five months before her death, she had, after great exhaustion, a group of attacks which seem to have been epileptiform in character, suggested cerebral degeneration.

Three years before her death she began to have paræsthesia of the fingers, associated, after a time, with slight incoördination. This condition gradually increased, but did not, for a long time at any rate, involve the legs.⁵ Six months before her death her gait became rapidly, and even suddenly, feeble and ataxic, while the incoördination of the hands also increased, both symptoms being exaggerated by closure of the eyes.

She had no lancinating pains at any time.

At the time I saw her, the pupils were found normal. The cutaneous sensibility of the arms and legs was greatly impaired, but the knee-jerk was exaggerated and ankle clonus was present. The whole body was greatly emaciated, and the muscles everywhere wasted, but not one group more than another.

She exhibited, as she had for a long time, a ravenous appetite for certain articles of food, especially coffee, and a perversion of taste.

Her spinal symptoms increased slowly, but steadily, until in a few months she became paraplegic. The limbs finally became œdematous, bed-sores developed on the sacrum, and she died from exhaustion, without having shown bulbar symptoms. Some degree of sensibility to pricking remained even when the paraplegia was practically complete.

The autopsy was made by Prof. R. H. Fitz, who kindly allows me to use his notes, from which I make the following extracts:

In the lower part of the ileum there were the scars of three ulcers apparently of tubercular origin, though no signs of tubercle were found elsewhere.

⁵ Her mental condition was too unreliable to permit of a satisfactory investigation.

The supra-renal capsules were normal, and all the other organs likewise, except for universal and excessive anæmia.

The cord and one ulnar nerve were placed in Müller's fluid for further examination, but the nerve was afterward mislaid and lost. The brain could not be obtained.

The cord was completely softened for about an inch at the level of the fourth dorsal nerve, but the softening was plainly anæmic in origin, for the cross section, here as elsewhere, showed the tissues, both white and gray, to be absolutely pale, without a trace of color.

The examination of the hardened spinal cord revealed the following conditions:

1. A sclerosis of a portion of the posterior columns and parts of the lateral pyramid tract throughout their whole length, and of the column of Türck, in the cervical region.

2. A recent degeneration of the direct cerebellar tract, beginning at the middle or lower part of the cervical enlargement and stretching upward as far as my preparations extend [upper cervical]; also a similar degeneration, partly older and partly recent, irregularly distributed along the sides of a thickened septum in the anterior root-zone on one side only (Gowers' tract?). The character of this recent degeneration was that already described in the early part of the paper. The glia spaces were enlarged and confluent, giving to the section a perforated appearance, the openings containing the remains of nerve elements, staining faintly with Weigert's hæmatoxylin, and the remains of granule cells.

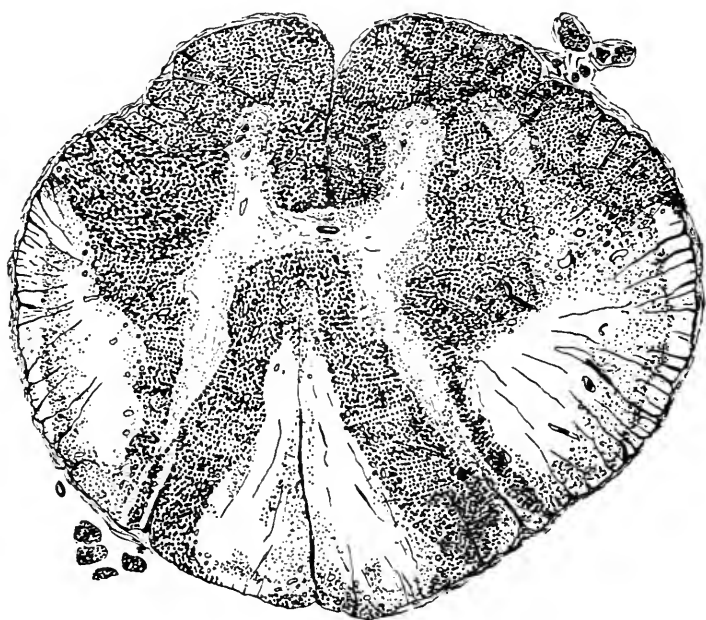
In the other cords of this series cells of the glia were distinctly swelled, but in these specimens that was not especially noticeable.

This recent, subacute process is probably due to œdema, such as characterizes the obstruction of lymph vessels and the first stage of myelitis. It has often been described, and of late has been studied by Schmaus.⁶

This same appearance of acute degeneration or œdema is met with along the borders of the older and more dense sclerosis in the lateral columns and the posterior columns.

⁶ Schmaus' *Die Kompressions-Myelitis*, etc. Wiesbaden, 1890.

The position of the sclerosis in the posterior columns is as follows: In the upper cervical levels the entire space between the posterior horns is involved, with the exception of a narrow layer adjoining the gray matter and the commissure. (See Plate I., A, B. In most of the sections at the level of A the unaffected area is narrower than here indicated.)



CASE I. UPPER CERVICAL. A.

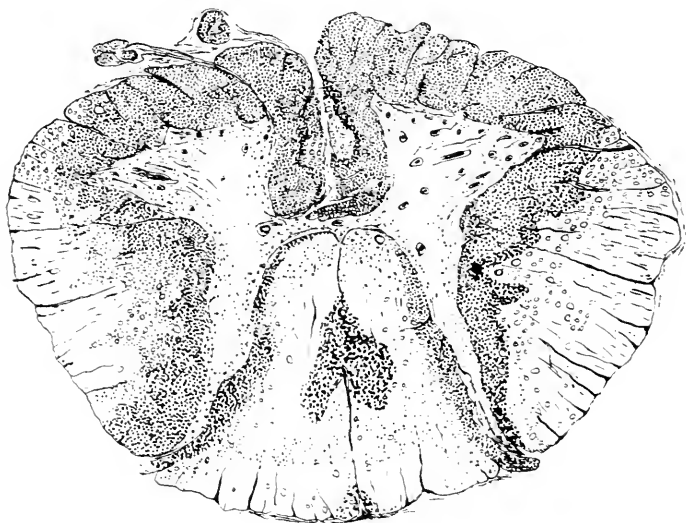
It will be seen that the area of the lateral pyramid tracts are only partially and unsymmetrically sclerosed, being separated from the direct cerebellar tract by a layer of relatively healthy fibres.

The limiting layer of unaffected fibres in the posterior columns should have been drawn narrower, as in the next section.

Scattered fibres in the sclerosed columns of Goll are unaffected, which lower down appear as definite tracts.

In passing downward toward the lumbar enlargement, there is a gradual tendency to the withdrawal of the more dense sclerosis into two broad bands, lying partly in the column of Goll and partly in the column of Burdach, and diverging toward the dorsal surface of the cord (Plate I., C), and a median strip lying mainly ventral of the areas

just described. Through a portion of the cervical enlargement, the inverted V-shaped area indicated in Plate I., B, is also free. The "posterior outer" field of Strümpell, or column of Bechterew, is involved by a recent degeneration analogous to that in the cerebellar tracts, at all levels of the cord to a greater or less extent, sometimes very seriously. This change is not indicated on the plates; but it is important, because rather characteristic of the "combined" sclerosis as contrasted with locomotor ataxia (Strümpell).



I. MIDDLE CERVICAL. B

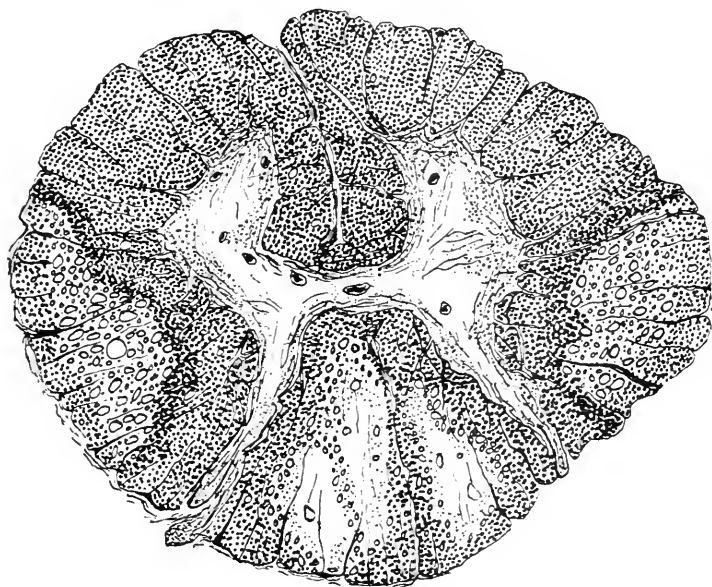
Note the irregular and incomplete sclerosis in anterior and lateral pyramid tract. The "recent degeneration" bordering on the old is indicated by circles—see text. The degeneration of the direct cerebellar tract is, however, recent, though not so indicated.

The lateral pyramid tract was more or less affected throughout its length, though less severely than the posterior columns, but whereas at the middle and lower levels the sclerosis occupied nearly the whole of the tract, and in the cervical region it occurred more diffusely, in patches, leaving parts of the tract free.

* I could not obtain the greater part of the lumbar enlargement for examination.

The nerve-roots were everywhere more or less diseased, the anterior somewhat more so than the posterior, yet all contained a large proportion of healthy fibres, the number varying at different levels of the cord and for different parts of the root.

On the whole, the relative integrity of the posterior nerve-roots and root-zones caused the Weigert stained sections to present striking contrasts. The changes in the roots were partly recent, partly old and associated with hypertrophy of the connective tissue.



I. UPPER LUMBAR. C.

The lateral sclerosis is, in the deeper parts, more dense than here indicated.

It is especially noteworthy that the degeneration in the anterior pyramid tract was present in marked degree only through a limited portion of the cervical enlargement (Fig. I.), and even here it showed itself only in patches. Throughout the whole length of the cord, however, even to the upper lumbar levels, a few degenerative spots of recent date were to be found in this area.

In the upper dorsal region occurred the transverse destructive process which had caused the complete paraplegia. Of this I will only say that the signs of active inflammation were conspicuously absent. The destruction of the columns of Clarke at this level may have been concerned in causing the degeneration in the direct cerebellar tract above; but this is not to be seen in the lower sections from the cervical enlargement, though it is complete at or below the middle of the enlargement.

The gray matter throughout the length of the cord was the seat of more or less serious degenerative changes.

The nerve-cells were few in number, and while some of them were nearly normal in appearance, almost all had undergone more or less change. Their processes were to be followed but a short distance; and they themselves were coarsely granular, and often without nucleolus or nucleus, and shrunken in volume.

It was difficult to say that any special group of cells had preëminently suffered. In some sections only a very few cells were to be seen, either in the anterior lateral or posterior horns.

The columns of Clarke below the softened portion seemed on the whole to have suffered less than the rest of the gray matter, but were not free from disease. The cells were reduced in number, and the fibres which traverse the area were less conspicuous than usual. (Lissauer.)

The same was true of the fibres of the posterior commissure, and perhaps also of the anterior.

The larger blood-vessels of the gray matter of the septa were sometimes empty and shrunken together, sometimes distended, and their sheaths contained a moderate number of leucocytes.

The Lissauer fine fibre tract near the apex of the posterior horn, though perhaps damaged, was not systematically involved.

It is not my intention to discuss at any length the topographical arrangement of the sclerosis in these cases, but I will simply refer to two papers, by Popoff and by Fran-

cotte,* in which attention is called to the fact that the column of Goll is really divisible into an outer and an inner portion, which develop at different periods, and may degenerate independently. Indications of this arrangement are seen in many of the sections taken from these cases. Finally, distinct degenerative changes of diffuse character, and apparently recent, were found in one or two of the cervical intervertebral ganglia.

CASE II.—The next two cases I saw but once, in consultation, and for the notes of the essential points in their histories on which alone I shall attempt to report, I am indebted to their attending physicians, Dr. A. N. Blodgett and Dr. M. A. Morris respectively.

The first of these cases is that of a woman of sixty, of active and energetic temperament, who is said to have been in good health until within two or three years before her death, that being the duration of her spinal symptoms. There was no reason to suspect syphilis.

The first symptom that greatly attracted her attention was a prolonged attack of diarrhœa which left her prostrated.

From this time on she was unable to go about as before, and suffered greatly from a sense of "numbness" in the feet, and from pains in the back and legs, which were at times of a lancinating character. On closer examination it was admitted that these symptoms were present in some degree for some time before the attack of diarrhœa, but they certainly grew rapidly worse after it. She very soon found herself unable to walk in the dark, and not without staggering even in the light. The general sensibility in the feet was found diminished, and, simultaneously, a slight degree of ankle-clonus was found to be present, and the knee-jerk exaggerated. A progressive tendency to contracture next showed itself.

By the end of a year similar symptoms had involved the hands and arms, and had progressed in the legs so far that walking was practically impossible.

* Arch. Neurol., March and May, 1890.

The loss of sense of position was noticeable in a high degree, and the cutaneous sensibility was greatly impaired, especially below the knees. The general feebleness increased, and the limbs became œdematous three or four months before her death. The pains continued, and the contractures became so great that the knees were drawn almost to the chin and pressed together, while the arms were affected to some degree in the same manner. There was general and excessive emaciation and wide-spread muscular wasting of diffuse character.

For some weeks before her death the urine was passed involuntarily. The mental condition was pretty good until the last month or so, except that she had become nervous and anxious.

Toward the last she lost flesh rapidly and had mild delirium. At intervals she cried out as if from pain, but most of the time was quiet.

Death occurred quietly and apparently from exhaustion, without new symptoms.

The autopsy was made by Dr. A. N. Blodgett and myself. The body was greatly emaciated, and the arms and legs still retained nearly the position given them by the long-standing contracture. There were several small excoriations on the legs, due to pressure and rubbing against one another, and the skin over the sacrum was of dark color, but not ulcerated.

The dependent parts of the body were œdematous. The organs were all very pale, but to all appearance healthy. The heart was empty and remarkably small, even for a woman.

The brain was removed, and appeared to be perfectly healthy, except for a moderate amount of atrophy of the convolutions. It was not examined microscopically.

The pons and medulla were examined, but did not stain well, and I cannot positively assert that they were wholly free from disease, though no marked changes could be detected.

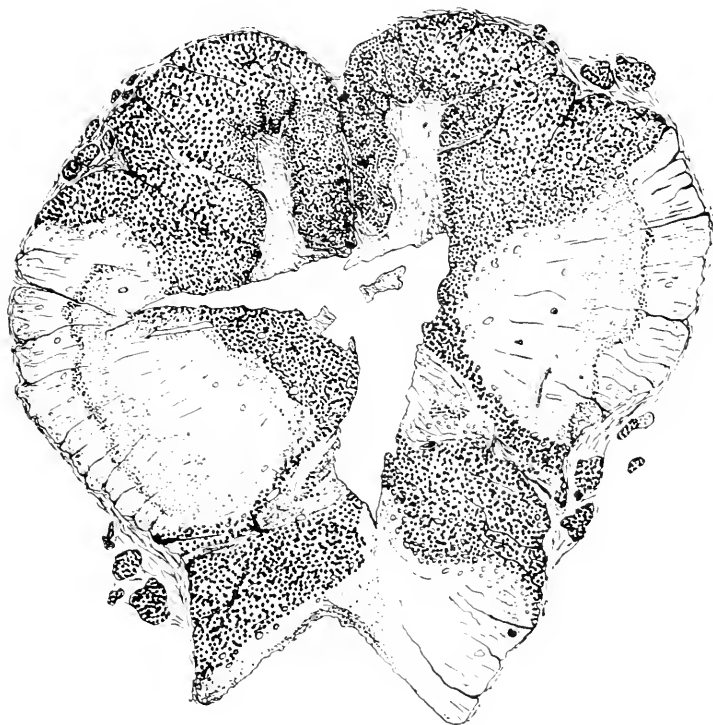
The examination of the spinal cord gave the following results:

1. Sections made while the cord was still fresh showed extensive granule-cell formation (Körnchenzellen-Myelitis), which was especially marked in the neighborhood of the sclerotic areas.

2. Sections made from the hardened specimens showed a dense sclerosis—

(a) Of the lateral pyramid tracts.

(b) Of the columns of Goll.



CASE II. UPPER CERVICAL.

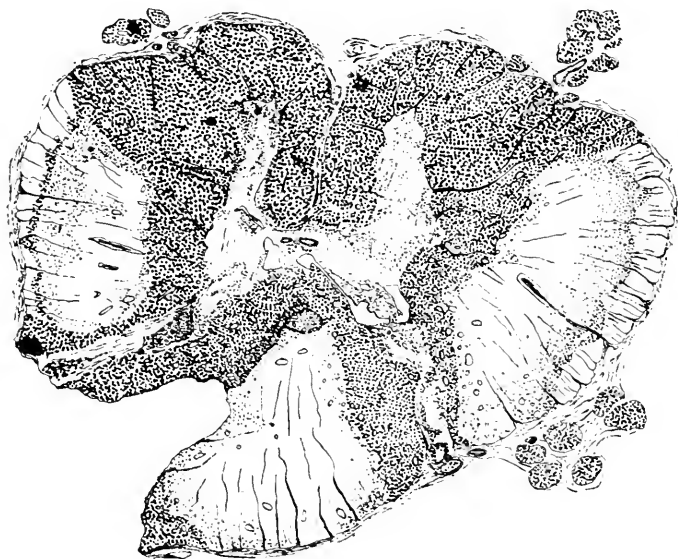
The clear space in the centre of the drawing indicates an accidental tear in the preparation, due to post mortem softening.

In the sections from the lower dorsal levels upward, the direct cerebellar tract, and, to a moderate extent, the parts adjoining this and also those adjoining the lateral pyramid tracts, were found involved; but the process here

was evidently of relatively recent date, and the line of demarcation between the two tracts was strongly marked.

The anterior pyramid tract was not involved, or only showed, here and there, traces of recent partial degeneration, giving rise to the perforated appearance already alluded to.

The more dense and older sclerosis of the posterior columns was most extensive in the cervical and upper dorsal regions, where it encroached somewhat on the columns of Burdach, while in the lumbar enlargement it



CASE II.

A short distance below preceding section. Posterior horns displaced in both cases. At the apex of the sclerosed areas is a column of relatively unaffected fibres.

had drawn together into two oval areas, occupying the middle of the column of Goll on each side.

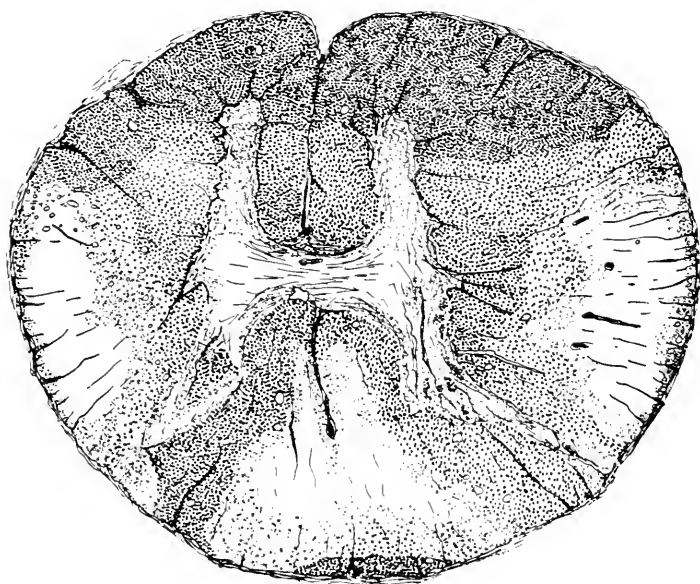
The tract of Bechterew ("posterior outer" field of Strümpell) was nearly free from disease. The Lissauer tract was but little affected at the point of the posterior horn; but, nevertheless, throughout the posterior cornu there were indications of a degenerative change of recent date, apparently involving systems of fibres running at an

angle with the transverse sections, and also the nerve-cells of the cornu.

The lateral limiting layer was intact, except for indications of slight, recent tissue-change—perhaps due to ante-mortem œdema, perhaps to post-mortem influences.

The nerve-roots were far less affected than the long spinal tracts, though they contained many altered fibres or their remains. The posterior roots were less involved than the anterior.

The ganglion-cells of the gray matter were affected somewhat at all levels and in all the groups, but were nowhere completely destroyed.



CASE II. DORSAL.

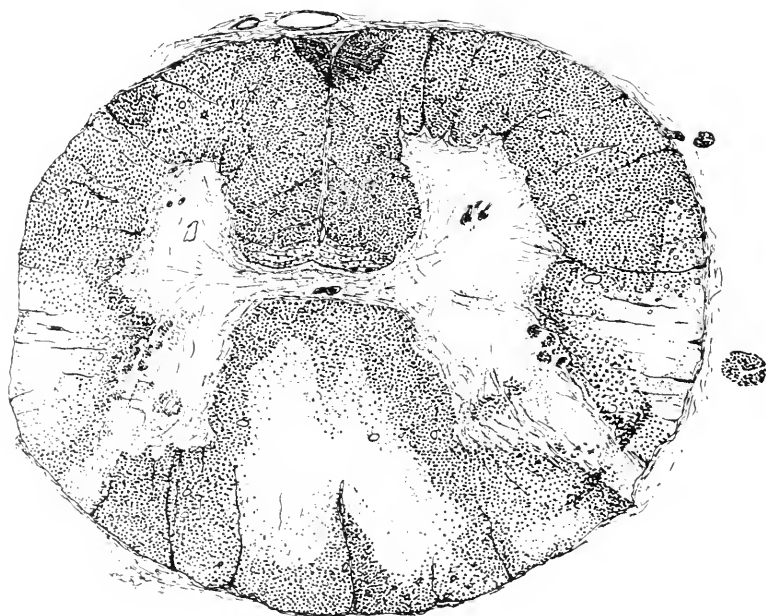
Considerable areas of diffuse degeneration of slight degree: indicated by lighter shading.

The cells of the columns of Clarke were seriously degenerated, and the changes here as well as in the rest of the gray matter were more pronounced in the lower portions of the cord than in the upper portions.

The pia-mater, especially in the lower dorsal and lumbar

regions, was thickened and adherent, and contained large numbers of nuclei, which also thickly studded the walls of the blood-vessels. Border sclerosis was present to a slight degree, as indicated by the grayish zone on dorsal, Fig. II.

The muscular atrophy, though in the end amounting to extreme emaciation, was never sharply localized, and this would seem to indicate that the degeneration of the ganglion cells, though very likely primary, had not the malignant character of that seen in typical amyotrophic lateral sclerosis and progressive spinal amyotrophy, if indeed it was the main cause of wasting.



CASE II. UPPER LUMBAR.

As regards the position of this case among the "combined sclerosis", it is to be noted that it presents a mixture of sensory, ataxic, spastic, and amyotrophic symptoms, and I would call attention here to the justice of Dana's⁹ criticism of Strümpell's¹⁰ familiar classification of the "primary sclerosis."

⁹ N. Y. Med. Record. 1886.

¹⁰ Arch. fur Psych., Vol. XVII.

that it does not do sufficient justice to the claim to a separate position, of a group of cases differing widely from locomotor ataxia in their clinical history, yet differing equally or still more widely from spastic paraplegia, in that ataxia is a prominent symptom.

It is certainly true, if appearances may be trusted, that, as in some of Westphal's¹¹ cases, the posterior sclerosis in all my cases, was older than the lateral sclerosis. Strümpell would class such cases as belonging to the general category of "tabes," but the propriety of this I cannot see, and



CASE II. LOWEST LUMBAR.

Symmetrical wedges of unaffected fibres occupy the mid-periphery of the lateral tracts.

the simple fact that my group of patients were almost all women would militate strongly against the admission of the diagnosis of locomotor ataxia. More probable is the general view that besides the influences which produce the typical sclerosis of Strümpell, etc., there are others [v. etiology] which may eventually cause sclerosis of all the tracts, but which act most strongly on the posterior columns.

¹¹ Arch. für Psych., Vol. IX.

It is possible that the relatively recent degeneration in the direct cerebellar tract may have been secondary to a disease of the columns of Clarke, but though this disease is obvious it is not complete, and in fact no greater than that which has occurred throughout the rest of the ganglionic matter of the cord, and this was not sufficient to cause any such change in the tributary anterior nerve-roots as is to be observed in the direct cerebellar tract.

It would be interesting to pursue the topographical analysis further, in the light of the observations of Lissauer, on the fine-fibre tracts of the posterior horns and the recent secondary degeneration experiments of Tooth,¹² which indicate different sources and functions for the fine and large fibre systems of the direct cerebellar tracts, but the state of the sections and my experience with normal specimens do not warrant the attempt. Certain of these points will be referred to later.

An important feature of the sections consists in the fact that they show a curious distortion of shape of the cord in the cervical region, suggesting the possibility of a certain degree of abnormality of development which may have given the underlying tendency to the degenerative disease.

At the upper end of the deformed portion, the posterior fissure forms a deep notch, and the notch at the opening of the anterior fissure is also somewhat deeper than usual.

A little lower down, the posterior or dorsal notch expands into a deep bay, which extends inward in a somewhat lateral direction, leaving, as its outer boundary, a broad tongue of sclerosed tissue, with a small area of relatively healthy tissue at its tip.¹³ It is difficult to conceive how this change of shape should be explained on the exclusive principle of shrinkage, either ante-mortem or during hardening, especially as no such appearance is seen in any other part of the cord. The amount of gray matter in the cervical cord was, also, less than usual.

The walls of the blood-vessels were in general somewhat

¹² Secondary Degenerations of the Spinal Cord : London, 1890.

¹³ This recalls the small area in the column of Goll usually found unaffected in Tooth's experiments (l. c.).

thickened, but this change was not so marked as in Case IV.

CASE III.—This patient, who was seen in consultation with Dr. Morris of Charlestown, was a woman of 51 years, married but without children. Her father died at 64 years; her mother at 60 years, both with what was called "consumption of the blood." So far as could be learned, she had never had syphilis. Three sisters were living and well.

The patient had been well herself up to nine months before her death, except that she was extremely anæmic and delicate, and of an unusually gentle and quiet disposition. She then began to suffer from dyspeptic symptoms of general character, but persistent. Four months later she felt a numbness in her hands, attended by more or less weakness, and incoördination, so that writing became impossible.

About two months later she began to have pain in the left leg, along the course of the femoral vessels, attended by swelling of the whole leg.

This improved somewhat after a time, but was soon followed by swelling of the right leg about the ankle, and by numbness of both legs, incoördination, and loss of power; also by marked loss of cutaneous sensibility.

These symptoms gradually increased, and gave place, shortly before her death to complete paraplegia of the legs. There were no mental symptoms.

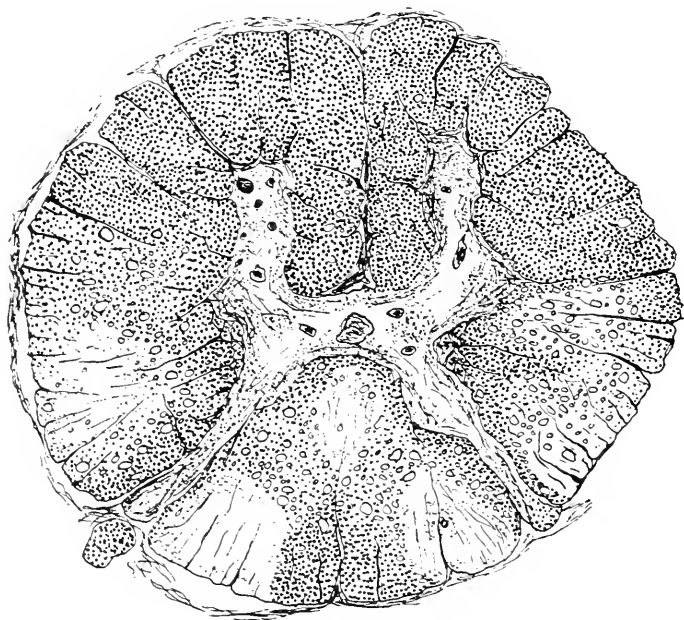
The autopsy was made by Dr. W. F. Whitney, of Harvard Medical College; the subsequent examination of the central nervous system by myself.

The thoracic and abdominal organs presented no morbid appearances of importance, except those of anæmia. The brain and cord appeared very small, though the patient was a small woman. The brain was perfect in form, the membranes were not diseased nor adherent; the convolutions were not atrophied. The cord alone was examined microscopically, after being hardened in Müller's fluid.

The sections showed a sclerosis in the posterior columns, and to a less degree in the lateral columns, throughout the whole length of the cord. (Figs. Case III.) The central and dorsal portions of the columns of Goll were relatively unaffected at all levels, but the "posterior outer" area of

Strümpell and Bechterew was everywhere invaded, either by the older or the more recent changes. The greater part of the fibres of the posterior roots were normal in appearance, but there were more diseased fibres than in the anterior roots. The posterior root-zone and the layer of the fibres along the posterior cornu were, for the most part, unchanged.

The gray matter was less affected than in any of the other cords, though not free from disease. Of the cell groups, the anterior inner group showed the greatest reduction in cells relatively, and the greatest number of shrunken cells. Some of the cervical sections showed a spot of disintegrated tissue near the middle of the anterior horn.



CASE III. DORSAL.

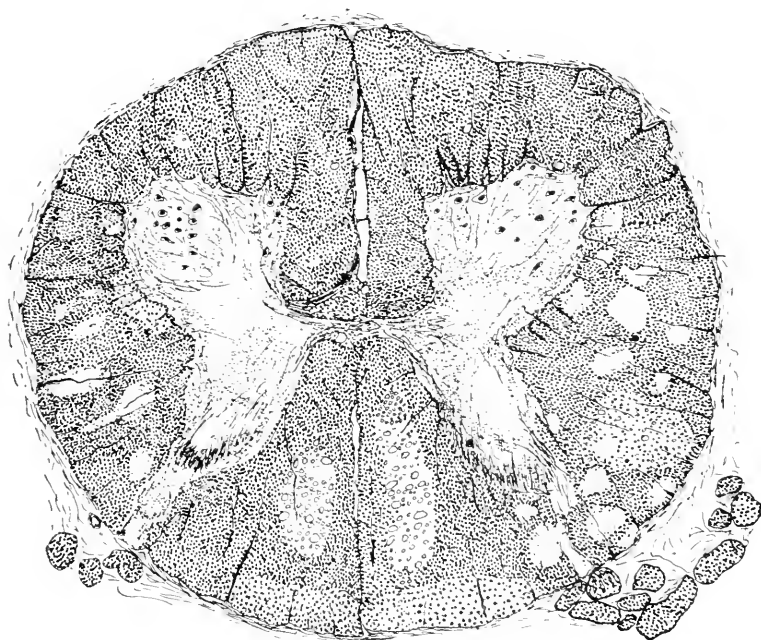
Sclerosis of "posterior outer field" Strümpell; Bechterew'; diffuse and apparently recent degeneration in lateral tracts; enlarged vessels in gray matter.

The cells of the columns of Clarke, and perhaps those of the anterior horn as well, were of unusually small size, corresponding to the small size of the cord. The fine fibre column of Lissauer seemed to be distinctly diseased, but the

staining was perhaps not perfect enough to decide this point. Many fine points were visible in this area, but they appeared, on close examination, to be the cut ends of connective tissue fibres, which were very conspicuous.

The changes in the lateral columns were rather diffuse, and not exactly coextensive with the pyramid tracts. The cerebellar tract was unaffected. The pia mater was somewhat thickened, and here, as well as in the posterior roots and in various parts of the cord, numerous large (relatively to the other cells) ovoid cells, perhaps of endothelial character, were to be seen.

The other most striking features were: (a) the great number of the cells and nuclei of the glia, some of them at



III. LUMBAR.

The sclerosis in the central portions of the columns of Goll is more strongly marked than here indicated: and the contrasts in the lateral columns are not so definite.

points of intersection, surrounded by considerable protoplasm (cedematous?); others long and slender and lying

in large numbers parallel with the fibres, so as not to be seen in their length except on longitudinal sections ; (b) a distortion in shape of the anterior horns (not shown in the figure) at a part of the upper dorsal region. Instead of lying parallel, the two horns diverge widely, so that their inner edges look almost ventrad. This is a recognized anomaly, and its presence, associated with other peculiarities that have been mentioned,¹⁴ suggest an imperfect development that may have been one of the underlying causes of the disease ; (c) the remarkably large size of the vessels, not only the fine arteries of the sclerotic area, but, to an even greater degree, the larger vessels of the gray matter. Besides being of great size, as if dilated, the walls of all these vessels were thickened and hyaline, and many of them were surrounded by leucocytes.

I do not know to what to attribute this condition, nor to what extent it may have contributed to the degenerative tendency ; but Buzzard¹⁵ has reported a case of locomotor ataxia where a similar vascular dilatation was noted by Bevan Lewis, and this writer, in his recent work on Mental Diseases, makes a disordered vaso-motor action leading to dilatation, of cerebral origin, responsible for the spinal sclerosis in many of the cases when this accompanies parietic dementia. His reasoning does not appear to me fully convincing.

The disease in the motor tract of this cord was so much less than that in either of the others, that it seemed inadequate to explain the terminal paraplegia (see page 71).

CASE IV.—The clinical history of this case has already been published,¹⁶ and I shall refer to it only very briefly, and mainly for the sake of calling attention to its pathological relations. It is especially interesting as being one of the cases where the disease may have been due in part to lead poisoning.

To sum up the clinical history, we have a man in middle life, a carriage painter for many years, living under comfortable

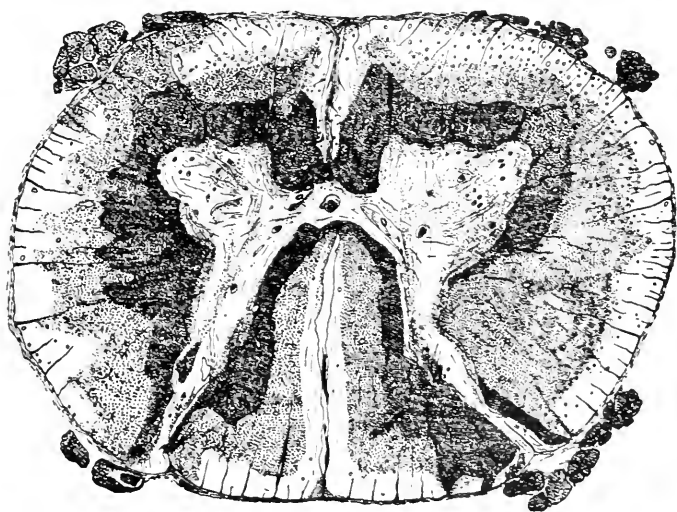
¹⁴ See also below, under Etiology.

¹⁵ Brain, 1888.

¹⁶ Transactions of the Association of American Physicians, 1889.

conditions, suffering for two years with progressive paræsthesia, a moderate degree of anæsthesia, beginning in the hands and feet, and muscular weakness of both arms and legs, without local symptoms, and with but little if any real incoördination. The knee-jerks were exaggerated and ankle-clonus was present.

The electrical irritability of the affected muscles was moderately diminished. We find these symptoms associated with very marked paleness of the skin, of light yellow cast, general emaciation and weakness, and the presence of albumen and casts and lead in the urine. All these symptoms increased slowly, but steadily, and terminated in complete paraplegia, with incontinence of urine, shortly before



CASE IV. CERVICAL.

This and the following drawings are slightly diagrammatic.

The degeneration in the direct cerebellar tract and the greater part of the annular degenerated layer is "recent," as indicated here and there by the circles.

The columns of Goll are wholly affected, but in the outer portion many fibres persist.

death, which occurred about two years after the onset of the first symptoms. His mother is said to have had similar symptoms, associated with diarrhœa and œdema of the feet and ankles, for several years before her death.

Toward the last he showed mild delirium and dizziness,

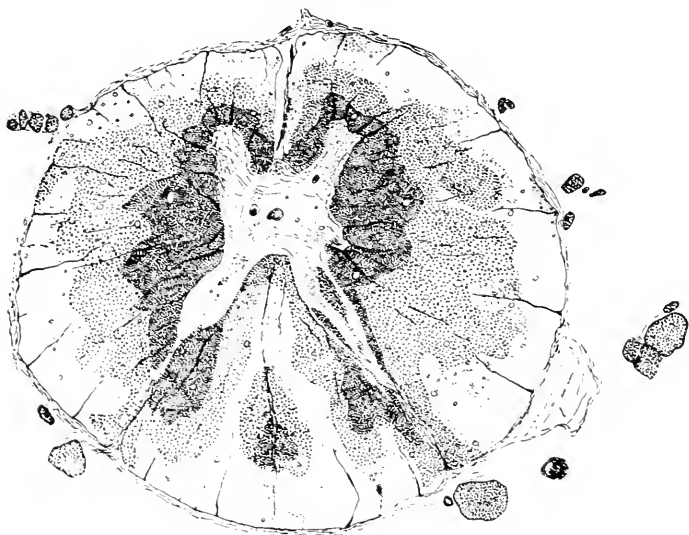
probably due to anæmia or œdema of the brain. There was some swelling of the feet and legs. Death occurred from gradual failure of the heart and respiration.

The autopsy was made by Dr. C. C. Tower, of S. Weymouth, to whom I am indebted for his notes of the case, and for permission to prepare and examine the nervous tissues.

In the fresh state the entire white mantle of the cord was found crowded with granule cells.

The spinal changes in this case (Figs. IV), differed from those already described in the following respects :

1. The thickness of the pia was somewhat greater, and may be suspected to have given rise to a species of annular sclerosis, though not to the degree which the drawings indi-



CASE IV. DORSAL.

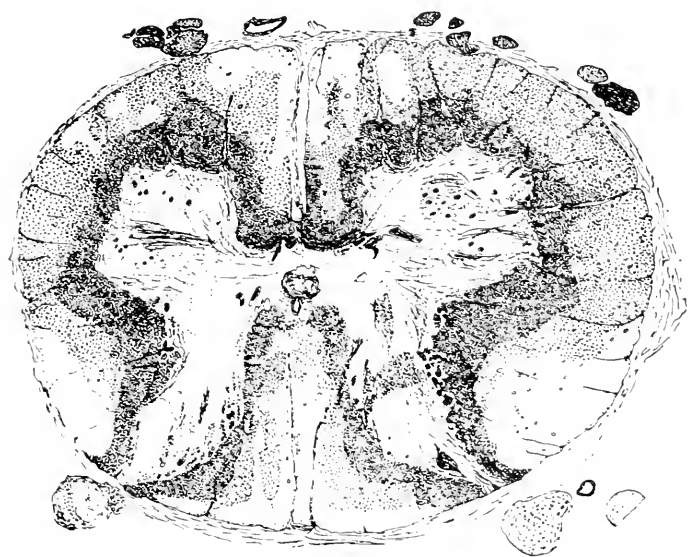
In this and several other drawings of the series especially Case I. there are indications of the division of the columns of Goll into outer and inner part see text, page 79

cate, the changes in the direct cerebellar tract, for example, being of recent date, and characterized by enlarged glia spaces still containing homogeneous masses staining faintly with carmine and with hæmatoxylin. Meningeal symptoms were conspicuously absent.

2. The sclerosis of the long tracts, and especially of the pyramid tract, was less regular in its distribution, and is more likely to have been caused or increased by secondary degeneration, which, in the case of the posterior columns, may have originated in peripheral neuritis.

3. The nerve-roots, especially the posterior, were much more seriously involved. Sometimes a mass of sclerotic tissue, in a nerve-root, lay side by side with a comparatively normal portion.

4. The columns of Goll contained many scattered axis cylinders, usually of small size, separated from each other by a homogeneous substance staining well with carmine.



CASE IV. LUMBAR.

Supplementary canal beneath the main canal. Varying degrees of degeneration of different roots and different parts of the same root, as indicated by the darker and lighter shading.

All the ganglion cell groups, including the columns of Clarke, had suffered greatly, and in proportion to the general denutrition, which was most marked in the lower dorsal region.

5. The hyaline degeneration of the vessels was much more strongly marked. At the lower dorsal and upper lumbar

levels, the recent process of degeneration or inflammation (œdema) had attained such a degree of activity that many of the parts not yet destroyed, the nerve-roots, especially the posterior, the fibres of the root-zones, the gray matter, the glia tissues, were in a state of active change.

In the carmine sections, the axis cylinders were to be seen in every stage of swelling, vacuolization and destruction.

As strongly against the exclusive meningitic origin of the marginal changes is the fact that it is not present in the lumbar region, except in the anterior columns, though the meningeal thickening is as great there as elsewhere. The drawings are somewhat diagrammatic.

In the dorsal, cervical and lumbar regions little else of the white mantle besides the limiting layer was free from disease, and even that was not wholly untouched.

In spite of the general tendency to degeneration, the Lissauer tract in the lumbar region contains a large number of fine fibres, and the fine fibres of the columns of Clarke are, at some levels, to be well made out, though the cells are largely altered and reduced in number.

The hyaline thickening of the vessels forms, perhaps, a part of a general arterio-fibrosis, to which the urinary signs may have been due. The other usual signs of chronic nephritis were not noted during life. It is also possible that the patient's prolonged exposure to lead may have partly initiated this series of changes, lead having been twice found in his urine.

Examination of fibres teased out in osmic acid from cutaneous and muscular filaments of the anterior crural and peroneal nerves, showed well-marked degeneration of some fibres with persistence of others, the change being far less than would be expected had the whole process been primarily one of neuritis.

Besides the general impaired nutrition, the patient was perhaps under the ban of inherited predisposition (see below under etiology).

The clinical notes of the four other fatal cases will be given in the Appendix.

I wish to speak briefly of this group of cases from the standpoint of pathological diagnosis and relationship; etiology; clinical diagnosis; prognosis.

We have the following pathological conditions to account for:

1. A relatively chronic sclerosis in the posterior and lateral centripetal and centrifugal long tracts.
2. A more acute and recent degenerative change in adjoining areas, partly diffuse and partly systemic in distribution.
3. A diffuse degeneration of varying severity and uncertain duration in the ganglionic matter of the cord, and probably the intervertebral ganglia.
4. Degeneration of moderate degree in the nerve-roots and peripheral nerves.

1. There seems to me no sufficient reason for refusing the name of *primary combined sclerosis* to the first of these conditions, in spite of the somewhat diffuse character of some of the lesions. Of course, the term "primary sclerosis" is to be taken as a provisional expression, and not as indicating the definite adoption of a pathological theory. It is highly probable that the sclerosis of the long tracts sometimes occurs because the cells from which they spring have lost something of their trophic energy,¹⁷ but this is not necessary, and is often only one of the conditions that makes a tract or a nerve vulnerable to other influences.

That a part of the degeneration, for example that of the direct cerebellar tract in Case I., was of the nature of secondary degeneration, is not doubtful, but it would be straining after an unreal pathological simplicity to reject the doctrine of primary degeneration altogether unless the evidence is clearly against it.¹⁸ On the contrary, where there are reasonable grounds for admitting it, we should welcome it as a possible way of obtaining new light on the etiology of these obscure affections.

As regards the recent subacute process of degeneration,

¹⁷ Compare O. Vierordt; Arch. f. Psych., Vol. XIX.; also a discussion on a paper by Hoffmann. Ibid. 1888. p. 710.

¹⁸ See Ballet and Minor, Arch. de neurologie, 1884; Popoff, Ibid., 1885.

in and around the older sclerotic areas, in new tracts, in the nerve-roots, and in the ganglionic matter of the cord and the ganglia, it will be sufficient for the purposes of our present inquiry, as to the probable etiology of the main disease, if we admit the suggestion that in so far as this was not due to secondary degeneration, or to the local impairment of nutrition, it may indicate a general enfeeblement of nutrition and circulation of the whole body, and bear out the view that the same influence may have contributed to develop the primary disease.

The nerve-roots were more or less altered in all the four cases; and in Case IV. some of the muscular and cutaneous branches of the anterior tibial nerve were found (osmic acid) to contain both diseased and healthy fibres. I know no way of telling whether these changes were secondary or primary, from the histological examination alone.

Such evidence as points to peripheral neuritis, as a part of the primary process, will be given under *clinical diagnosis*.

Finally, it is probable that a part of the changes in the gray matter were primary, and of the same date, and even the same origin with the sclerosis of the long tracts.

CLINICAL DIAGNOSIS.

Most of what needs to be said under this head has been already noted.

Supposing the "combined sclerosis" to have been the primary lesion in these cases, it remains to be considered in what relation they stand to other groups of cases of similar pathology.

Strümpell, who has discussed this subject in a series of careful papers,¹⁹ recognizes four varieties of primary sclerosis: 1, the "family form" of locomotor ataxia, known as Friedreich's disease; 2, the typical locomotor ataxia; 3, the spastic form of tabes (in which the lateral columns are believed to be primarily and mainly affected; the posterior columns later and less); 4, intermediate forms between the last two.

¹⁹ Arch. f. Psych., etc., Vol. XVII.; also Vols. X., XI.

Dr. C. L. Dana, of New York, in his paper upon the same subject, published in the "N. Y. Medical Record" for 1886, justly criticises this classification as not adequately recognizing that form in which ataxia is prominent, and the posterior columns principally affected, and yet which presents a clinical history quite different from that of locomotor ataxia.

In most of the cases reported in this paper, the pathological or clinical signs indicated a greater disease of the posterior than of the lateral columns. Yet neither their course nor the symptoms were characteristic of locomotor ataxia, and most of the patients were women and non-syphilitic, and thus doubly unlikely to have locomotor ataxia.

The difference between these different types seems to me, however, hardly more striking than the signs of relationship between them, as shown by similarity of etiology, the frequency of mixed forms (Strümpell's fourth group), the transition of a simple into a combined sclerosis, the frequent involvement, early or late, of the ganglionic matter in the degenerative change.

In this connection I would call to mind the varieties of spinal degeneration met with in connection with chronic paralytic dementia. These forms include the posterior sclerosis, lateral sclerosis, combined posterior and lateral sclerosis, incomplete types of the latter form, multiple sclerosis (Schultze), amyotrophic lateral sclerosis.

The diagnosis of these mixed and irregular types such as I have reported and which I believe to be not infrequent, of course, rests on the recognition of sensory and motor symptoms, together with some sign (such as exaggerated knee-jerk or ankle-clonus, paralysis of sphincters, marked incoördination) that these symptoms are of spinal origin. Where it happens that the symptoms are mainly sensory, consisting in paræsthesia of various kinds, associated with a moderate amount of motor weakness and some impairment of electrical irritability, and as in Case III. and of the Appendix, I know of no way of excluding the diagnosis of chronic generalized neuritis, and it is not impossible that, as in locomotor ataxia, more or less

neuritis is sometimes present, even at the outset, as it doubtless is in most of the cases before the close (See Appendix, Case III.).

The chief practical interest of these cases lies in the *etiological* problems which they suggest, and in studying them from this point of view it is not necessary to be so strictly precise as to the category in which we place them. For, although the different forms of spinal sclerosis are by no means all alike in their etiological relationships, yet they differ less in this respect than in others.

Besides the fact that almost all of the patients in this group of eight or more were women, and that they were all either debilitated or anæmic persons, and several of them prostrated by exhausting disease, it is noticeable that certain marks of developmental weakness were observable in some of them; and finally, that the toxic influence of lead may be suspected of having played a part in three of the eight fatal cases.

In reading over the voluminous literature of the spinal sclerosis, one cannot, I think, fail to be struck with the fact that the causes which play by far the most important part are: a strain of constitutional weakness, such as is pre-eminently seen in Friedreich's disease, both family and sporadic forms; and specific toxic influences, of which syphilis is the chief. It is true that in a vast number of individual cases other causes seem to have been at work, but for purposes of study I believe that it is the wisest to confine ourselves to those which are the most important, in the hope that by widening our conception of these, we shall find that the others come into line with them to a greater or less extent.

As regards the influence of developmental weakness of the spinal cord itself, the evidence hitherto accumulated is small, but it is enough to suggest that abnormality of shape or structure or small size, either predispose to disease, or form a correlated manifestation.²⁰

²⁰ See Art. Ruckenmark, by A. Pick, Real-Encyclopedie, second edition. See, also, Strumpell; Arch. für Psych., etc., XVII., 233.

An interesting table indicating the small size of the cord in Friedreich's disease, has been drawn up by Blocq and Marinescu²¹, and I have copied it in a condensed form, in order to compare their figures with those taken from my cases.

Unfortunately, neither the sex nor the size of the patients from which their measurements were derived is stated. The first three of my cases were women, and under rather than over the average size.

BLOCQ AND MARINESCU.			PERSONAL CASES.			
	Normal Cord.	Friedreich's Disease.	Case 1.	Case 2.	Case 3.	Case 4.
Largest cervical section...	14 x 9½	10 x 7	10 x 9	9½ x 8	11½ x 8	13 x 10
Smallest dorsal section	9½ x 7½	5 x 5	6½ x 6½	7½ x 6½	6¾ x 6½	7¾ x 8
Largest lumbar section	10 x 9	8½ x 8	.....	9¼ x 8	9 x 8	10 x 9

The significance of anatomical abnormalities is discussed by F. Schultze,²² with reference to congenital fissures and cavities, irregularities in the arrangement of white and gray matter, smallness of cord, imperfect development of myeline, as perhaps occasionally leading to one or another form of disease, though not incompatible with health, especially if the function of the part is not subjected to spinal strain.

Kahler and Pick²³ report an extensive sclerosis of the posterior columns, with very small dorsal cord, diminutive posterior horns, imperfect development of the columns of Clarke, etc.

²¹ Arch. de neurologie. May, 1890.

²² Abstract, in the Arch. f. Psych., etc.. Vol. XI., p. 270.

²³ Central Nerven-System, 1879, p. 102.

Buckholz²⁴ reports a combined sclerosis, with abnormal shape of the gray matter.

The abnormalities in Cases II. and III. of those here reported have already been indicated. The sections in Case IV. showed two slight peculiarities not yet described, which are not unworthy of mention. One was a double canal in a part of the lumbar enlargement, no very rare anomaly, but one which I have seen in a case of Friedreich's disease, reported by Dr. S. Everett Smith, with a microscopic examination by myself.²⁵ The other was a deep and narrow indentation running very obliquely into one anterior-lateral column in a portion of the cervical enlargement, so that a broad tongue of nerve tissue lay separated from the rest of the white substance by a mass of loose connective tissue growing inward from the pia mater.

The interest of these peculiarities is increased by the fact that the patient's mother appears to have suffered, in advanced years, from symptoms resembling his.

In regard to the influence of the neuropathic condition in general, as predisposing to sclerosis, it is difficult to form an accurate opinion, since greater or less degrees of this temperament are so common. I believe, however, that among the cases of combined sclerosis, even exclusive of Friedreich's disease, we shall find a larger proportion of neurotic subjects than in other forms of sclerosis. This was true of Case I. in my group. Case IV., and perhaps Case III., though they would have been called perfectly normal persons, were of an unusually, not to say unnaturally, mild and gentle disposition.

Kahler and Pick, in the paper just alluded to, refer to certain observations indicating the propriety of regarding acute poliomyelitis as among the neuropathic stigmata in relation to spinal diseases of development. Case II. of the present group had one daughter, who had suffered from this disease in a very severe form, besides, however, having two healthy children.

²⁴ Arch. f. Psych. etc., XXI., p. 230; also *Ibid.*, Vol. XX., Delirium Acutum, etc. See also Strumpell, Arch. f. Psych., etc., XVII., 233.

²⁵ Boston Med. and Surg. Journ.

It has been noted that the majority of the patients in my group of eight were women. I do not know to what to attribute this, unless it be mere accident, combined, perhaps, with the fact that women are possibly even more liable than men to suffer from the debilitating influences that appear to excite this form of sclerosis.

The next most important set of causes are the toxic influences.

It has been established, beyond a doubt, that syphilis, ergot, and lathyrus are direct causes of spinal sclerosis. It is probable that certain diseases give rise to poisons which act in a similar manner, though not with the same frequency. The latest observations in this direction are those of Lichtheim,²⁶ who has reported cases of pernicious anæmia, which seemed to lead to a rapid degeneration of the spinal cord, especially of the posterior columns. The changes involved both the nerve fibres and the neuroglia, and, from their description, it is obvious that they correspond closely with the more recent processes of degeneration observed in my cases. Lichtheim further says that these changes are absent in pseudo-leucocythemia and chlorosis, but are found in true leucocythemia, and he regards this as an argument in favor of their toxic origin.

Lichtheim refers also to the observations of Fürstner, who found that the abnormal condition of the blood produced experimentally by centrifugal rotation caused similar changes in the lateral columns and pyramid tracts; also the analogous observations of Minnich on the spinal changes associated with chronic jaundice, and those of Tizzoni on the effects of the extirpation of the supra-renal capsules. Degenerative changes in the posterior columns are also said to have been reported in a case of Addison's disease. It is reasonable to suspect that with this large group of cases those reported in this paper stand in close analogy.

The opinion of various observers is in favor of the view that simple impairment of the nutrition acts as a contributive cause in toxic cases of more obvious kinds; thus it is well

²⁶ Verein f. wissenschaftliche Heilkunde in Königsberg, 28 October 1889. Abstract in *Centralblatt f. allg. Path. u. Path. Anat.* January, 1890. p. 20.

known that Tuzec, who first reported the ergot sclerosis, and more recently Grünfeld,²⁷ failed to obtain experimentally the changes in the posterior columns among ergot eaters, and Brunton, in commenting on this fact, suggests that the miserable conditions of life of the ergot-eating peasants is an essential condition for the result.

On the other hand it is certain that all these disorders of nutrition may be present in an extreme form without exciting spinal changes, and we have yet to learn just what the noxious influence really is. Even the extremely exhausting dysentery of hot countries, as analyzed by Pugibet,²⁸ though it gives rise to paralysis of various sorts, does not appear to initiate these progressive spinal sclerosis.

Three of my eight patients (as well as the mother of Case IV.) suffered from exhausting diarrhœas through a long period, and one of them had been prostrated by chronic rheumatism and malaria. Within the past year I have seen two patients with symptoms apparently referable to the condition which we have been considering, where the grippe seemed to act as a partial cause.

There is one other influence which is believed to at least contribute to spinal changes, both those affecting the gray horns and the sclerosis of the long tracts, namely, over-exertion or stimulation, with which Lichtheim includes the sensory irritations acting on the posterior columns.

If spinal changes are really brought about in this way—and for the motor ganglionic apparatus this seems to be certain—the fact may be utilized to help clear up the much-discussed matter of the origin of the system degenerations.

It has been established, through the experiments of Wedenski²⁹ and H. P. Bowditch,³⁰ that the nerve-fibre is practically inexhaustible. Even the continuous faradization of many hours leaves it as capable of performing its functions as before.

²⁷ Arch. f. Psych., etc., XXI., 618.

²⁸ Rev. de méd., 1888.

²⁹ Centralblatt f. d. med. Wissenschaften, 1884.

³⁰ Jour. of Physiol., 1885; also, Arch. f. Anat. u. Physiol., 1890.

The parts that tire are the muscle and the nerve-cells, and these of course tire rapidly. From this we may infer that if fatigue is capable of inducing sclerosis, it must be by first exhausting the ganglionic matter from which the long spinal tracts spring.

Paralysis occurs occasionally in acute anæmia, and sclerosis,³¹ but it is usually temporary, and it may be guessed that it is due largely to œdema. The results of cutting off the entire blood supply of the spinal cord are well known, through the experiments of Ehrlich and Brieger, Sprouck³² and Singer,³³ to consist in destruction of the anterior horns and of the anterior lateral limiting layer and anterior nerve-roots, leaving the long tracts relatively unaffected, just the reverse of the picture presented by the primary sclerosis. At the same time, it is very doubtful whether we can argue from acute anæmia to chronic anæmia, since in the latter case the influence of œdema is liable to come in, and this, to judge from the results, slight compression of the cord and its membranes (Kahler; Schmaus),³⁴ is especially prone to affect the nutrition of the white fibres. The condition of the circulation in the dorsal portion of the cord (Moxon; Adamkiewicz), favor the occurrences of anæmic softening in that region, and it is evident that in Case I. we have a typical example of this sort, and in the other cases similar but partial results.³⁵

Before leaving the subject of the toxic sclerosis, I desire to call attention to the possible effect of lead and arsenic in this direction. The facts that are at my command are too meagre to make it worth while to discuss their bearing at any length. I will simply say that I have ascertained by experiments, continued through a number of years, that lead and arsenic are frequently to be found in the urine of healthy persons; and also that I have found lead with rather

³¹ See Leyden. *Rückenmarkskrankheiten*.

³² *Arch. de Physiol.*, etc., 1888.

³³ *Sitzungsber. d. Kais. Acad. des Wissenschaften*. Wien. 1887.

³⁴ *Die Kompressions-Myelitis*, etc., Wiesbaden, 1890.

³⁵ See Max Beck, *Inaug. Diss.* Breslau, 1888; see also, in this connection, Braun; *Deutsches Arch. f. Kl. Med.*, 1888. Marie; *Progrès méd.*, 1884. Duplay; *Arch. gén.*, 1885.

more than the usual frequency in the urine of persons suffering from spastic paraplegia and from the symptoms recorded in this paper.

In a case of spastic paraplegia in a middle-aged lady of delicate health, who is still under observation, arsenic has been found in the urine three times in two years.

These influences also are perhaps only contributive.

The age of the patients will be next considered briefly as a possible etiological factor in the disease. One hears it occasionally said that old age is liable to bring with it scleroses of the cord; but positive evidence of this kind seems to be rather lacking. Leyden discusses the question, but concludes that it is a degeneration of the ganglionic matter, rather than sclerosis of the white columns that comes with age; and Dana³⁶ comes to a similar conclusion. Ribail³⁷ reports a number of cases where the irritation of the calcareous deposits in the membranes of old people has caused sclerosis, but of a purely local character. Demange³⁸ devotes some space to the subject, and concludes that the sclerosis of old people consists in the thickening of the vessels and connective tissue, but differs widely from system sclerosis.

A number of cases are, however, on record which show that moderately advanced age brings at least no immunity from the primary sclerosis. In my cases the age of the patients only comes in as perhaps sufficiently advanced to increase their feebleness.

In most cases, doubtless, more than one, perhaps many etiological factors are at work, but to save, through prophylactic measures, even an occasional patient from this crippling malady is worth a large amount of investigation. No other causes for the sclerosis and degeneration were apparent in these cases of which I have reported the post-mortem examination, beyond those which I have mentioned. All the patients, except the first—who had had a troubled life, and where a suspicion of syphilis was present—had led

³⁶ Annual Meeting of Amer. Neurol. Association, 1890.

³⁷ Neurol. Centralblatt, 1885, p. 178.

³⁸ *Ibid.*, p. 227; also, Rev. de Méd., July, 1885.

substantially quiet and protected lives, and the more weight is therefore to be attached to the constitutional weakness, the feebleness of nutrition, and the possibility of toxic influences. More persons than we realize may be on the border line of disease, and partial causes are often of prime importance.

The apparent importance of the part played by the anæmia and impaired nutrition in these cases suggests a hopeful outlook through the use of careful and thorough treatment by tonics and nutritives.

So far as I have been able to test these measures, the patients' general nutrition has responded in a measure, but the course of the spinal disease has not been materially modified. This may, however, mean only that the treatment was begun too late.

The increasing importance which toxic influences of various sorts are assuming as among the causes of the spinal sclerosis is presumptive evidence that the morbid change is primarily degenerative rather than inflammatory in character; but this argument, likewise, is a theoretical one, and, in fact, when the matter is viewed broadly, the inflammatory and degenerative, focal and sympathetic processes are found to be united by closer bonds than is generally believed, and to occur under similar etiological conditions.⁴⁰

It is probable that much will be learned in the future by following two lines of research; the first being the relative vulnerability of the different cellular fibrous systems; *i.e.*, their relative liability to suffer under influences acting on all parts alike; the second being the study of the analogy between morbid influences, now seeming to be of different kinds. It is possible that many of them will be found to unite under them.

To sum up, once more, the features that make these cases important, they give us evidence of the occurrence among persons, especially women, of advanced age, constitutional feebleness, or impaired nutrition of somewhat irregular types of "combined sclerosis" of the cord, often of

⁴⁰ See Gowers: *Diseases of the Nervous System*; and Grasset: *Maladies nerveuses*.

relatively rapid course and fatal issue, associated with a tendency to subacute diffuse degeneration. Besides the causes indicated above, this condition may be occasionally due, at least in part, to toxic influences of a preventable kind. Finally, in the early stages of some of these cases, it may be impossible to say whether we have to deal with myelitis or multiple neuritis, and, in fact, both conditions are probably often present together. (See Appendix.)

It might be urged, especially in view of the diffuse changes which I have considered as secondary, or terminal, that the sclerosis of the long tracts was really a secondary degeneration, due to focal myelitis, or to meningitis as Ballet and Minor,⁴¹ Popoff,⁴² Dejerine, Obersteimer⁴³ and other writers have assumed even for many of the older cases of similar kind.

It is, however, improper to urge this origin where the focal disease cannot be demonstrated; and, moreover, as against the assumed improbability of the occurrence of "primary" degeneration of fibrous tracts, we have an important mass of new evidence in the discovery that similar degenerations occur in the brain under conditions more or less analogous to those noted in this paper.⁴⁴

APPENDIX.

NOTES ON THE FOUR FATAL CASES WITHOUT AUTOPSY.

The first case is that of a woman in middle life, seen by me several times, many years ago, in the Out-Patient Department of the Massachusetts General Hospital, and later at her home.

⁴¹ Arch. de Neurologie. 1884. 44.

⁴² Ibid.. 1888.

⁴³ Anatomie des Central Nervensystems.

⁴⁴ Meyer; Allgem. Zeitschr. f. Psych., etc., 1890, 664. Cramer; Faser-schwund nach Insolation Allgemeine Zeitschr. f. Psych., etc., 1890, 692; also a summary by the same writer in the Centralblatt f. Allgem. Path. u. Path. Anat., 1890, 3. Fendrassik; Ueber die Localisation der Tabes Dors. Deutsch. Arch. f. Klin. Med., Bd. 43. 543. Hensen; Schultze; Allgem. Zeitschr. f. Psych., etc., 1890, 687.

Her first complaint was of "numbness" in all four extremities, beginning at the periphery and spreading in intensity and extension so as to give a sense of intense paræsthesia to the whole limb. This was associated with marked debility and severe and progressive anæmia. At first there was no marked impairment of motion, but after a time the legs became weak and weaker, though they showed no local paralysis or atrophy. Then followed a gradual increase of paralysis, resulting in paraplegia and death. There had been no pain nor acute symptoms at any time. The whole duration was upward of two years. There had been no typical signs of lead-poisoning, but an examination of the urine had shown the presence of "considerable lead."

The second case is that of a lady sixty-four years of age. Her symptoms began in May, 1887, and she died paraplegic in a little more than one year later.

During the summer of 1887—that is, a few months after the onset of the disease, and when her symptoms consisted mainly in a sense of numbness in the fingers and toes—she was seen in Paris by Charcot, who gave her a written opinion to the effect that she was suffering from slight disease of the posterior columns of the cord.

My notes of the case cover almost the entire period of her illness, but may be condensed as follows: The symptoms began with the sensory symptoms above noted. To these were soon superadded progressive incoördination of both upper and lower extremities, diffuse emaciation without localized atrophy, progressive loss of cutaneous and muscular sensibility and impairment of muscular power. The urine was free from lead, and there were no signs of chronic nephritis or mellituria. There was no incontinence of the urine until a short time before her death, when the weakness of the lower extremities increased to complete paraplegia, attended with the formation of bed-sores. No autopsy was permitted. The patient was unmarried, non-syphilitic, and lived under the best of conditions for general nutrition.

The third case is that of a man, about fifty years of age, and latterly a postmaster by profession. He had been in the army, but had never contracted syphilis. He suffered, however, both while there and later for many years after, from chronic diarrhœa, chronic malaria and rheumatism, through which his constitution, previously a fine one, became undermined, so that during the period that he was under my observation he was pale and thin.

The case is also important from the fact that here, as in several other instances, lead was twice found on examination of the urine, though it was not traceable to any special source.

His symptoms consisted in an intense sense of numbness of all four extremities. To speak more exactly, the feeling complained of was as though the limbs were encased in some hard substance and packed in ice. These symptoms were much more strongly developed in the lower than in the upper extremities, as was the case with all my patients. The motor symptoms consisted in a very slowly progressive feebleness, without loss of any particular movement. The knee-jerk was absent, but there was no incoördination. There were no bladder symptoms, unless shortly before his death, when he was no longer under my observation. There was a moderate amount of impairment of cutaneous sensibility, and the electrical reaction of some of the leg muscles was slightly diminished. In general, however, the muscles were fairly firm.

Like one of the fatal cases with autopsy, reported in the earlier part of the paper, this patient improved notably in his general condition and slightly as regards his nervous symptoms under the influence of generous feeding; but the gain disappeared after a time, and he evidently became paraplegic and died in a condition of exhaustion after a few months. Lead was found in the urine.

The fourth case is that of a lady, fifty-one years old, seen in consultation with Dr. C. K. Cutter of Charlestown. The first symptoms had been noticed about two years previously, and consisted in a sense of numbness, referred to the feet

and finger-tips, not at first attended with muscular weakness. Previous to the time of the appearance of these symptoms she had had good health and a good color. Since then she had grown weaker and pale. The weakness of the legs was first noticed six months before my examination, and had increased gradually and steadily, so that she was able to walk but little and could do no work. The sense of numbness had also spread over the whole of the legs, thighs and over the lower part of the trunk, and in the upper extremities it had spread to the elbows. Constriction was felt around the chest and abdomen. For six months or more she had been steadily losing strength and flesh. The skin had also been of a yellowish color, at one period, so that the physician who at that time attended her said that she was jaundiced. She had noticed no special muscular wasting. The sense of constriction was present also in the legs, and at times she felt as if her stockings were filled with pebbles. She had noticed but little, if any, distinct loss of sensibility, yet had observed that a touch on the skin caused a somewhat unnatural sensation. When her legs had lain for some time in the same position she was unable to tell just where they were; but this had not been noticed in regard to the hands.

The patient was pale, with a yellowish cast to the skin, the hair was gray, and she looked much older than her years. She was said to have had a good deal more than the average of intelligence. The sense of touch in the fingers was found perfect for ordinary tests, yet the patient said that the sensation was not quite natural. The sense of touch in the feet and legs was impaired, but slight pressure was felt and pretty well localized. Her gait was uncertain, and there was some static ataxia. The power to distinguish cold and warmth appeared to be unimpaired. A touch with the point of a pin on the feet and legs was at once felt and recognized. The sense of the position of the toes was impaired. The knee-jerk was absent, even with reënforcement. She had had no pains characteristic of locomotor ataxia, and she had no bladder symptoms;

neither was there anything in her history to suggest syphilis.

I never saw this patient again, but learned that she died a few months after my visit, making the duration of the case in all about two years and a half.

Besides these fatal cases, I have seen a number of others, occurring like these in persons past middle life, and presenting similar symptoms.

In one case the urine was found, on three analyses at different periods, to contain lead, and the patient, after having become nearly helpless, finally improved somewhat, so that she could walk about. This case was that of a woman between thirty and forty years of age.

AN UNUSUAL CASE OF SHOCK FOLLOWING CONCUSSION OF THE LUMBAR SPINE.

Dr. Calvin L. Harrison (Medical Record, December 6, 1890) reports the following case: A boy, aged thirteen, was struck on the back with an iron-loaded whipstock. His "head swam" instantly, and he became unconscious and collapsed. Under stimulation he rallied and regained consciousness, and complained of tenderness over the third and fourth lumbar vertebræ, at which place he located the impact of the blow. The patellar reflexes were at first absent, but the right now returned. Twenty hours after injury a small area of cutaneous hyperæsthesia was found over the left anterior superior spine of the ilium, and tenderness extended over the spines of the vertebræ from the fifth lumbar to the fifth dorsal, and on the following day to the second dorsal. An area of cutaneous hyperæsthesia appeared in the right scapular region, also in the left lumbar and lower dorsal regions and at either side of the vertebral column at the fifth lumbar vertebra. In the course of four days the hyperæsthesia extended, mainly in tracts to the right of the lumbar and dorsal vertebræ. On the sixth day the hyperæsthesia began to disappear, after which he steadily improved, and, having no symptoms, was discharged from the hospital on the eleventh day. There was no history of hysteria, the patient being strong and well at the time of the accident.

A. F.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:

FREDERICK PETERSON, M.D., New York.

From the German:

WILLIAM M. LESZYNSKY, M.D., N. Y.

BELLE MACDONALD, M.D., New York.

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:

JOHN WINTERS BRANNAN, M.D., N. Y.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:

F. H. PRITCHARD, M.D.

ALBERT PICK, M.D., Paris, France.

From the English and American:

A. FREEMAN, M.D., New York.

ANATOMICAL AND PHYSIOLOGICAL.

SUBSTITUTION IN THE CEREBRAL CORTEX.

The "American Journal of Insanity" reports the work of Professor Gaule in this direction. At a meeting of the Zurich Medical Society a dog was exhibited from which the Professor had extirpated the whole cerebral motor area on both sides, as determined by electrical excitation. After the operation the dog presented the ordinary loss of voluntary movements. His re-education was undertaken by the author, with the result of teaching him to catch pieces of meat thrown to him, to give either paw at command, and to use the paws in digging up buried meat, and so forth. In the discussion which followed, opinions were divided between an incomplete extirpation and the formation of new cerebral connections. The latter was the view held by the exhibitor.

In this same line of study come the labors of Prof. Goltz, as reported by J. M. Langley, in the "Journal of Physiology." The dog, as exhibited before the Physiological Congress, had been deprived of the left half of its cerebrum and left corpus striatum. The animal, if allowed to run freely about the room, tended to move towards the left in large circles, but if called he came in a straight line towards the caller. It was easy to make him move in a circular direction towards the right, if he was attracted by pieces of meat held in front of him. He gazed fixedly at food held before him just in the same way as a normal dog.

The condition of the right eye was that of hemiambyopia as described by Loeb. The dog could run and walk on his hind legs. In eating and licking, the tongue was moved symmetrically like an uninjured dog. He was very watchful and barked loudly; consequently it was impossible that the right half of the larynx should be paralyzed. When anybody he knew approached him in a friendly way, his exhibitions of pleasure, such as wagging the tail, etc., were perfectly normal. He also used both paws in excavating anything he had buried, and if he was prevented from using the left paw, the right could be used exclusively. Hitzig had stated that if the dog was able to use his right paw as a hand, that some fragment of the left front leg centre had been left, and that this portion had taken upon itself the whole function of the centre. Munk had also asserted that a dog whose so-called motor area, the "Fühlsphäre" of Munk, had been destroyed, remained entirely devoid of sensation in the limbs and other parts of the right half of the body. Tests were made proving that the dog in question had retained his muscular consciousness in the right fore paw, and also that sensibility was intact in other parts of the body.

After the exhibition the dog was killed and the brain submitted for examination. The right hemisphere was found to be uninjured and the left hemisphere almost completely removed. From a closer examination of the remaining fragments, it was found that the only parts of the cortex on the left side which remained in functional connection with the optic thalamus region, or with the lower parts of the brain, were (*a*) a portion of that part of the hippocampal convolution which normally underlaid the corpus callosum, and (*b*) a small area of gray substance in the neighborhood of the optic chiasm. From microscopical examinations of the remainder of the brain substance, it was concluded that removal of the cerebral hemisphere and corpus striatum on one side caused, (*a*) complete degeneration in the nerve cells, and diffuse gray substance of the nuclei of the optic thalamus of the same side, as described by v. Monakow in the new-born rabbits, but a certain number of medullated fibres remained throughout the region of these nuclei. The degeneration spread up to the median line of the soft commissure, but there was no appreciable degeneration of the gray matter ventral to the optic thalamus proper. The gray substance of the third ventricle which laid mesially of the anterior of the tenia of the optic thalamus was smaller than normal, but contained nerve cells. There

was some degeneration in the posterior commissure, the habenular ganglion, the tenia of the optic thalamus on the same side, and in both Meynert's bundles. (*b*) Considerable diminution of the gray substance of the aqueduct in the region of the anterior corpus quadrigemina was found. (*c*) Great degeneration of the nerve cells and of the diffuse gray substance of the substantia nigra of the same side. (*d*) There was a slight diminution in the size of the pons on the same side. (*e*) Some atrophy of the nerve cells of the descending root of the fifth nerve existed on the opposite side to the lesion. (*f*) Degeneration of the corpus callosum and of the anterior also existed. The secondary consequences of the removal of the posterior part of the cortex were: (*a*) Complete degeneration of both dorsal and ventral nuclei of the external corpus geniculatum. (*b*) Complete degeneration of the nerve cells and diffuse gray substance of the internal corpus geniculatum, some normal and medullated fibres still remaining in its ventral portion. (*c*) Some degeneration of the anterior corpus quadrigemina as observed by v. Monakow and others. (*d*) Little or no degeneration in the posterior corpus quadrigemina. (*e*) Some, but not great degeneration in the anterior brachium of the posterior corpus quadrigemina.

B. M.

THE NERVE-SUPPLY OF THE SENSE OF TASTE.

John Ferguson, M.D., L.R.C.P. (Medical News, October 18, 1890.) states that although the lingual branch of the fifth nerve and the gustatory branches of the glosso-pharyngeal carry the nerve-fibres of taste to the tongue and palate, it was doubtful whether these nerves were the real supply to the parts of taste, or whether they carried nerve-fibres from some other source.

One of his patients had complete loss of taste on left side of tongue, extending to the tip, but the posterior part of the tongue, fauces and palate retained the power of taste. The patient died of phthisis, and on autopsy a small exostosis was found in the scaphoid fossa pressing upon the posterior opening of the Vidian canal and by pressure destroying the Vidian nerve. The nerve degeneration could be traced along the Vidian, and thence along its two branches, the carotid and petrosus major. This latter enters the geniculate ganglion of the facial. The degeneration could be followed until the point was reached at which the chorda tympani is given off. The degeneration here left the facial and followed the chorda tympani throughout its length.

This condition of secondary degeneration was traced from the chorda tympani to the lingual branch of the third division of the fifth nerve, and thence along the lingual.

From this case he concludes we have complete proof that the nerve-supply of taste for the tip and anterior part of the sides of the tongue comes from the fifth nerve and enters the superior maxillary division of the same nerve. The course must then be from the superior maxillary nerve into the sphenopalatine ganglion, thence by the Vidian, through the Vidian canal, to the gangliform enlargement of the facial, along this to the chorda tympani, through the chorda tympani into either the lingual, a branch of the third, or inferior maxillary of the fifth. A. F.

THE CEREBRAL CONVOLUTIONS.

In an address before the British Medical Association, Prof. Cunningham (Boston Medical and Surgical Journal, October 23, 1890) states that the chief differences between the hemispheres of the human and lower forms of the primate brain consist, first, in greater richness of secondary furrows and convolutions in man, and, second, in the greater tendency of the chief fissures in the human brain to be bridged over or interrupted by small gyri. Discussing the influences by which the furrows and convolutions are produced, he says the geometrical law involved is simply this, that in the growth of a body the surface increases with the second, but the interior with the third power of the radius. From this it is evident, seeing that the proportion of internal white matter and external gray matter is in all cases a uniform one, that in the evolution of a large animal out of a small animal, a disproportion between the gray capsule and the white core of the cerebrum must result. This is compensated for by the extended cortex placing itself in folds or puckers, and thereby reducing the capacity of the capsule to a degree which brings it into correspondence with the white contents; consequently, the formation of the convolutions and furrows is the result of the tendency on the part of the superficial layer to increase by surface extension, and of a mutual space accommodation of the gray substance and of the white conducting paths. A. F.

COMPLETE SCLEROSIS OF GOLL'S COLUMNS AND
CHRONIC SPINAL LEPTOMENINGITIS.

A communication by F. W. Mott, M.D. (*Am. Journal of Medical Sciences*, January, 1891), contains histories of several cases of degeneration of Goll's columns, furnishing the following interesting points: These columns may be connected with the conduction of impressions relating to the muscular sense, or their fibres have some other function. The absence of visceral complications does not lend support to the view that the columns conduct visceral sensation. The clinical resemblance between one of the author's cases and that recorded by Vierordt, viz., briefly summarized in both cases, a history of alcoholism, pains in lower extremities, followed by wasting, no loss of sensation except muscular; after a time the upper extremities similarly affected; death from tuberculosis. The pathological condition in the cord was also very similar, both as regards area of degeneration and the partial affection of the roots. The complete destruction of Goll's columns, except a few fibres posteriorly in the cervical region and medulla and the absence of degeneration elsewhere in the cord, were present in both. The absence of knee-jerks (and inability to stand with eyes shut, in Vierordt's case) could be explained by the degeneration of the terminations of motor nerves, which would also account for the muscle wasting. The degeneration of the motor nerve-endings might be explained by the alcoholism, or the leptomeningitis, causing nutritive disturbances of the anterior roots. In a case of the author, and also in Vierordt's to a less degree, some of the anterior roots showed degenerative changes. Though the leptomeningitis may not have been severe enough to interfere with the nutrition of the whole nerve-fibre, yet it was sufficient to cause a degeneration of the terminals, especially the long fibres of the legs and arms, which are more remote from their seat of nutrition.

Dr. Mott draws the same inference in regard to Goll's column. In his patient the destruction of this column in the cervical region, whereas hardly any degeneration can be seen in the lower lumbar and sacral regions, he explains thus: The seat of nutrition of the fibres of Goll's column is the spinal ganglion. The ganglia and roots were involved in an inflammatory process, with thickening of the vessel walls. The portions of these fibres most remote from

the seat of nutrition will suffer; hence, the fibres which come from the leg will be degenerated most high up in the cord.

A. F.

A CONTRIBUTION TO THE ETIOLOGY OF JACKSONIAN EPILEPSY.

K. Yamagiwa (*Virchow's Archiv*, Bd. cxix., Hft. 3) calls attention to two cases of pronounced cortical epilepsy, in which post-mortem section of the brain revealed disseminated patches of distoma pulmonale in the cortex. In connection with these parasites there was a new connective tissue growth, with giant and round cell infiltration. The walls of the blood-vessels were very much thickened, especially the adventitia. The parasites were also found in the lungs. (*Centralblatt f. klinische Medicin*, No. 47.) B. M.

CLINICAL.

TWO FATAL CASES OF AN UNUSUAL FORM OF NERVE DISTURBANCE, ASSOCIATED WITH DARK RED URINE, PROBABLY DUE TO DEFECTIVE TISSUE OXIDATION.

Vaughan Harley, M.B., M.R.C.P. (*British Med. Journal*, November 22, 1890), draws attention to two patients who, presenting no appreciable physical signs, exhibited grave nerve disturbances—to wit, insomnia and excessive prostration, disordered intellect and coma, ending in sudden collapse and death. At the same time in both cases ischuria was present in a well-marked form, along with decided chemical alterations of the coloring matters of the urine. The urine, which was dark red, showed no blood, albumen, sugar or bile; but in one case, specially examined, it contained two abnormal pigments. One was a red substance, precipitated by basic lead acetate and possessing characteristic absorption bands. It was convertible by oxidation into urobilin, and by deoxidation transformed into an almost colorless yellow substance, likewise precipitated by basic lead acetate. From this precipitate a red substance could be obtained, which by still further oxidation was in turn equally convertible into urobilin. The urine also contained a cromogen, which was by oxidation transformable into a red matter, which on still further oxidation was also changed into urobilin.

From these facts the author concludes that the abnormal coloring matter is a precursory state of the normal urinary pigment, being a lesser oxidized stage of it. Consequently there must have been a default of oxidation; and if this occurred in the pigment of the urine, we may infer that there existed a deficit in the oxidation of the other substances throughout the body. The auto-intoxication, one might suppose, would be produced by a default of oxidation, more especially in those substances which originate in the body. No necropsy was obtainable in either case. A. F.

TREPHINING AND OPENING THE DURA MATER AS A DIAGNOSTIC MEASURE IN DISEASES OF THE BRAIN.

Dr. Miles F. Porter (Medical News, October 11, 1890) relates the case of a boy of twelve who for several years suffered from epileptoid convulsions. After a time he did not lose consciousness during the attacks, which would commence by flexion of the fingers of right hand, quickly followed, first by tonic, then clonic spasm of the right upper and lower extremity and right side of the face. Paralysis came on later, involving first the thigh and leg, then the arm, and lastly the face on right side; motor aphasia developed with the facial paralysis.

He regarded the case as one of epileptoid convulsions from organic cortical disease, or subcortical, about the Rolandic fissure; but exploratory trephining revealed nothing. After operation the convulsions decreased in number and severity, speech improved, and he now walks unassisted. In explanation he says the local shock was promptly followed by a corresponding reaction, in which the vitality of the tissues had been raised sufficiently high to determine a return to the normal state. Dr. Porter believes that exploratory operations should occupy the same relation to brain surgery that they do to abdominal surgery. A. F.

A CASE OF VISCERAL NEURITIS.

In the "Alienist and Neurologist" for October, Dr. John Ferguson, of Toronto, reports the case of a woman, aged forty, who had, following an attack of *la grippe*, the most agonizing paroxysms of pain, coming on mostly toward morning. Despite all efforts to relieve the patient, she gradually grew worse, and died after two weeks of great suffering. The examination of the nerves and ganglia

throughout the abdomen showed them to be in a highly inflamed condition. Microscopically, there was marked degeneration in some of the nerve tissues. Neuritis of the peripheral nerves is an established condition, and it was thought there was no reason why there might not be an attack of neuritis affecting the viscera and causing some of the violently painful and obscure cases occasionally met with.

B. M.

PARALDEHYDE ADDICTION.

B. Mattison, M.D. (Medical Record, November 29, 1890), quotes the case of a young woman who, after recovery from chloralism, took paraldehyde for insomnia, with the formation of a habit. She remained well nourished, but suffered from headache, disturbed accommodation phosphène and brow pains. During abstinence there was apathy and depression, but when indulging freely she would become greatly excited for a few hours, after which she passed into a profound sleep lasting one to three days. Complete withdrawal of the drug caused symptoms like those following abstinence in a morphine habitue. At the end of a week, under codeine, sleep was secured, and within a month convalescence was complete.

A. F.

RARE FORMS OF HYSTERIA.

In the "Medical Chronicle" for October, Dr. Dreschfeld reports three cases of hysteria, which were marked examples of spurious hydrophobia. Two other patients had been bitten by a dog, after which, from time to time, they had a series of attacks resembling hydrophobia in one or more particulars, accompanied by unconsciousness, sometimes lasting for days. During the attacks there was an irresistible desire to bite; one patient bit the furniture, the other bit himself. Both patients recovered. The third case was that of a young girl whose finger was bitten by a dog; the bite was slight, but the girl amputated the finger herself; after this she had several attacks of Charcot's *grand mal*.

B. M.

PSEUDO-MUSCULAR HYPERTROPHY IN AN ADULT.

There is the history of such a case in the "Boston Medical and Surgical Journal," November 13, 1890, presented to the Boston Society for Medical Improvement by Dr. G. L. Walton. The man, thirty-eight years old, gave a good

family and personal history. The lower extremities were excessively developed, especially the vasti-externi, the supra- and infra-spinatus and triceps extensor muscles and the calves. There was atrophy of the glutei, inability to cross the legs, loss of patellar reflex, lardosis when standing that disappeared when sitting, and a slow, rolling gait. The electrical reactions were weakened in the affected muscles.

L. F. B.

A NEUROPLASTIC OPERATION.

An operation designed for the restoration of nerve-trunks that have been destroyed by injury or disease is thus described by H. H. A. Beach, M.D. (Boston Medical and Surgical Journal, December 11, 1890): Pick up the nerve with a tenaculum, and transfix it with a silk suture; open the sheath for three and one-fourth inches in either direction from the wound by following one of the divided ends, or in both directions, for one and three-quarter inches; then, having measured the distances accurately, partially divide the nerve trunk, in a vertical direction to its axis, at the required point and split the nerve to a point within one-third of an inch of its end.

A. F.

POISONING BY SULPHONAL.

In the "Medical Record," December 13, 1890, Dr. F. H. Dillingham reports the case of an elderly lady who by mistake took ninety grains of sulphonal. She rapidly passed into a state of stupor with stertorous breathing, while the radial pulse became almost imperceptible and the extremities cold. Under treatment she improved, but suffered later from incoördination of all the muscles. The face was drawn to the right side and there was ptosis of right lid. She had a constant desire to urinate, followed by paralysis of the bladder and rectum. Recovery took place at the end of about six weeks.

A. F.

SUCCESSFUL REMOVAL OF HYDATID TUMOR OF THE BRAIN.

The "Medical Age," November 10, 1890, contains a report from the London "Lancet" of a boy, aged sixteen years, who suffered from headache, nausea, vertigo, double optic neuritis with atrophy, loss of memory, mental dullness and paresis of right arm and leg. Mr. Grubbe trephined over the left motor area, and extracted a hydatid cyst holding nineteen ounces of fluid. The patient recovered in six weeks except for his blindness.

A. F.

THERAPEUTICAL.

HYPNOTISM FROM A MEDICO-LEGAL ASPECT.

Under the heading of Society Proceedings, in the "Journal of the American Medical Association," is an article on the scientific aspect of medical hypnotism, or treatment by suggestion, by Dr. H. H. Lachersteen, as recently read before the Chicago Medico-Legal Society. In the discussion of the paper, the consensus of opinion was against the indiscriminate use of hypnotism by the laity and profession. Hypnosis was a departure from health, a pathological condition, a true neurosis, and the after effect was a disturbance of the mental forces, the frequent repetition of which was apt to cause deterioration of brain and nerve function, intellectual decadence and moral perversions. The dangers of hypnosis were very great, so much so that the matter had been made the subject of legislation in Russia and public demonstrations of hypnotism prohibited. Medical men only were allowed to use it for so-called therapeutic purposes, and then only when in conjunction with colleagues. In Belgium it was restricted to use by the profession, and in no instance could it be applied to young girls under eighteen years of age. In France its public exhibition was prohibited, and in the medical department of the army and navy it had been interdicted. It was to be hoped that the American physicians would insist on some sort of legislative action which would limit hypnotism to medical men, under restrictions, and would absolutely prohibit public exhibitions of the dangerous practice. That so far in the therapeutical and physiological investigations as to its merits, nothing had been developed which would warrant the use of so dangerous a method. B. M.

SOMNAL, A NEW HYPNOTIC.

W. Gilman Thompson (N. Y. Medical Journal, November 29, 1890) writes that the effects of this drug are less striking and certain than those of urethane and less depressing than those of chloral. It causes no vertigo or depression. It is usually prompt, and in half-drachm doses, combined with whiskey or syrup of tolu, it is easily taken and harmless. In drachm doses it is not powerful enough to decidedly control delirium tremens, maniacal delirium or severe pain.

As it is rapidly eliminated from the body, it may be administered each night for a number of days without any obvious ill effects. It acts very much like chloral, but is

more pleasant to take, and not so depressing in its effects upon the nervous system and the circulation. A. F.

PSYCHOLOGICAL.

PSYCHIATRY IN ITS RELATION TO MEDICINE.

Prof. Von Kraft-Ebing (*The Medical Age*, September 10, 1890) says that every practitioner should consider the morbid psychic symptoms of his patient and exercise all the influence of a moral therapy. Illustrating the potency of psychic influence, he mentions the cessation of hæmophysis when the longed-for physician appears, thus calming the excited heart and bringing about thrombosis of the bleeding vessels. Many diseases, as neurasthenia, hysteria and hypochondria, begin with psychic morbidity, and a knowledge of this is essential in their management. He regards it necessary to the physician's education that he make the psychic features of a suffering patient the subject of investigation and render himself conversant with their manifestations.

To the immoderate indulgence in alcohol he ascribes twenty per cent. of all mental diseases, and he believes the prophylaxis of these maladies is a goal of the future which shall be achieved when the knowledge of these disorders becomes the common property of physicians and general society. Many a life bearing some psychical abnormality has gone, he says, to mental ruin because the germ of the disease, present in youth and discoverable to the practical eye in the first stages of its development, was not recognized and not weighed in such a manner that by proper education, by bodily and mental discipline and by correct choice of occupation such persons might be protected, and thus the diseases later to break out at least retarded.

A. F.

THE PROPER DISPOSITION OF THE CRIMINAL INSANE.

Dr. Archibald Church (*"Medico-Legal Journal,"* September, 1890) considers the following propositions, viz.:

"1. That in the proper disposition of the criminal insane, criminality alone should be the criterion of classification.

"2. That the criminal insane should be cared for in separate institutions.

"3. That insane criminals committing capital offences should be sequestered during the period of their natural lives.

"4. That insane criminals committing lesser offences should be committed for periods equal to terms of imprisonment for their crimes made and provided, and as much longer as their insanity persists.

"5. That criminal insane may be liberated upon regaining their reason by the pardon of the Governor, with the consent and recommendation of an advisory board."

L. F. B.

ELECTRICAL.

THE TRUE POSITION OF ELECTRICITY AS A THERAPEUTIC AGENT IN MEDICINE.

The "Boston Medical and Surgical Journal" (October 2, 1890) contains Dr. Morton Prince's views upon this subject. Electricity is a most valuable aid to the diagnosis of certain forms of disease. To test electrical reactions requires great care and no little technical skill. Proper apparatus is indispensable. As a palliative for neuralgia, nothing can be more valuable than electricity, particularly galvanism. This is also true of acute and subacute neuritis. The atrophy and paralysis following anterior polio-myelitis, in joint lesions and disuse, in hemiplegia following cerebral hemorrhage, in diphtheritic and pressure paralyses, in hysteria, muscular rheumatism, articular rheumatism, painful neuroses, it is palliative and sometimes curative.

In neurasthenia it acts as a tonic, relieves nervousness and dispels insomnia, but is in no sense a cure. Conditions following grippe yield to it in a remarkable manner; and in psychoses and neuroses, symptoms disappear like magic, the insomnia often disappearing at once. Electricity is not of the slightest use in curing such diseases as locomotor ataxia, disseminated sclerosis, progressive muscular atrophy of the spinal type, myelitis or general paralysis. Whoever hopes to cure epilepsy and migraine by electricity is doomed to disappointment. Faradism probably works, first, by reflex action through the sensory nerves, inhibiting the pathological process in the nerve centres, upon which the local process probably depends; and, secondly, by direct stimulation of nerves and muscles. It is by reflex action, probably, that pain is inhibited. Galvanism probably acts in the same way, and possibly produces local chemical and physical changes which aid in its therapeutic effects. It is claimed for galvanism that it is electrolytic. In many cases the relief obtained from the electric current is largely through *suggestion*, especially in psychoses and neuroses and in those affections where pain plays an important part.

L. F. B.

Asylum Notes.

POINTS, FACTS, OPINIONS AND EXPERIENCES
IN FAVOR OF THE RECEPTION OF VOLUN-
TARY PATIENTS FOR CARE AND TREAT-
MENT IN HOSPITALS FOR THE INSANE, AND
MORE ESPECIALLY FOR CARE AND TREAT-
MENT IN PRIVATE HOSPITALS FOR THE
INSANE.

BY RALPH L. PARSONS, M.D.

The question regarding the reception of voluntary patients in hospitals for the insane is one of very great importance to many interested parties: to nervous invalids who are desirous of placing themselves under the care of the physician in charge of a particular hospital; to persons who are near, but have not yet crossed the border line of insanity; to the innocent victims of a habit that so dominates the will as to render the subject utterly powerless to help himself, if his mental weakness does not constitute actual insanity, as is oftentimes the case; to the insane themselves, who are placed in such hospitals against or without their volition; to the friends of all those sufferers who are interested in whatever is of benefit to them; to the whole community, any member of which may at any time become either such a patient or a friend of such a patient; to physicians generally; to physicians in charge of hospitals for the insane: and it is believed that the facts, opinions and experiences to be adduced are sufficient to demonstrate that the practice of voluntary admissions to hospitals for the insane has a strong, if not an overwhelming support. This subject is of such general importance that its discussion with reference to any individual or class of individuals would be too narrow.

There are many nervous invalids who have not yet so far lost the use of their reason that they could properly be declared lunatics, but yet whose minds and nervous system are so far disordered that they need the same sort of care and attention as is given in hospitals for the insane; and who are desirous of placing themselves under treatment in some particular hospital. In some of these cases the choice

of the sufferer is influenced by the fact that an acquaintance has received benefit at this hospital ; and in others that the patient himself has been there as a committed patient, finds the premonitory symptoms of insanity recurring, and wishes to return to the place where he was formerly cured early enough to avert the full development of the disease.

There is another class of persons who are not technically insane but yet whose minds are as really disordered as are the minds of many certified lunatics. These persons are not vicious, nor were they in any way knowingly responsible for their condition. They have become the slaves of opium or of alcohol through the immediate influence of disease ; as in the case of some women after childbirth, or through the unfortunate advice of some physician or friend. If they are sent to a place where many such persons are congregated and associated together, their influence upon each other is liable to be prejudicial ; association with many similar sufferers tends to lower their moral tone and diminish their power of self-control. If they wish to place themselves under treatment in a hospital for mental diseases, they should have the right and the power to so. In the State of Massachusetts special provision is made for the admission of this class of patients in the State Hospitals for the Insane. They have always been received in the private hospitals of that and of other States without objection.

The admission of voluntary patients, like the above, in hospitals for the insane is of advantage in several ways. In the first place, it is in the interest of preventive medicine, and in the interest of patients suffering from any of the forms of disease which are liable to lead to fully developed insanity, that provision be made for their early treatment in a hospital especially adapted to the treatment of mental diseases. If admission to hospitals for the insane could be so arranged that persons suffering from the early symptoms of insanity would avail themselves of the advantages of such hospitals as early as they would seek efficient medical advice for other ailments, a step would be made in the direction of diminishing the vast crowd of mental wrecks which now encumber our public asylums. If, by reason of the great demands upon their resources, the public hospitals cannot now undertake the duty of receiving such patients, the reason is all the greater why private hospitals should not only be permitted, but encouraged to receive them.

If the objection should be made that the admission of voluntary patients to hospitals in which certified patients are detained might be injurious to the latter, the reply would be that a large experience has shown that this is not the case; but, on the contrary, that it is better for the insane to be associated with persons who are less diseased rather than with those who are more diseased than themselves.

The association of voluntary patients in the same hospital with committed patients is of advantage to the latter in another way. If all the patients in a particular hospital are certified lunatics, the mere fact of having been an inmate of that hospital affixes the stigma of being, or of having been, a lunatic; the hospital, too, becomes known distinctively as a lunatic asylum, a crazy house, or a lunny house, and its inmates as lunatics. Whereas, if patients who have the use of their reason, or who at least are not technically insane, are associated in the same hospital with patients whose insanity requires to be certified, the latter are relieved to a great extent, if not altogether, from the implication which a residence in such hospital would otherwise involve. Now, the friends of insane patients and the patients themselves, after their recovery, highly appreciate the advantage thus afforded, while the voluntary patients have no cause of complaint because they have had their own choice, and in any case are supported by the knowledge that they are not certified lunatics and so class themselves with the sane members of the family. It is of no avail to urge that insanity is no more disgraceful than any other disease and is less disgraceful than many others; for all rational persons know and feel that the loss of the reason involves a disability and oftentimes a degradation, compared with which almost any other calamity sinks into comparative insignificance; that death, even, would be far preferable to incurable insanity. And what is true with regard to the interests of the insane and of their friends is also true in regard to the interests of the whole community, if they did but know it; for not one can truthfully say that he is assured against an attack of this dreadful disease.

It will readily be admitted that voluntary patients, whether by themselves or in association with committed patients, are oftentimes causes of greater annoyance to the physician in charge of the hospital than committed patients are. The latter are under the more absolute control of the physician. He has the power to detain them whether they are pleased or displeased. He can listen to their com-

plaints or refuse to listen. He can interest himself in a multitude of matters relating to their happiness and welfare, or he can refrain from doing so. And he can give plausible and more or less satisfactory explanations and reasons for all he does, or fails to do. In the case of voluntary patients, however, he *must* manifest an active interest in their welfare and listen patiently to their inquiries and complaints, or else he is liable to lose his patients; and this would be a damage both to his pocket and to his reputation as a wise and skillful physician and manager of men.

But these annoyances have their compensations. No man or body of men can for a long time have a dominating power and control over other men without the imminent danger of losing somewhat of that refinement of manner and of that delicate consideration for their views, feelings and wishes which he would naturally have toward them if they were less within his power. Men with great power tend to become arbitrary and unyielding; and this applies to physicians in charge of the insane, as well as to other men. So the mingling with their other patients of some who can go or remain, as they see fit, is of positive advantage to the physician himself. His voluntary patients tend to stimulate him to high endeavor, and to restrain him from idleness and from inattention to the interests and feelings of those who are under his charge. And this favorable influence of necessity extends to and pervades the moral atmosphere of the whole hospital. Nurses and other employees attain a higher grade of excellence; they become unconsciously more gentle in their demeanor, and more attentive to and interested in their duties. The patients who are under commitment are favorably influenced by the general tone of the household and by observing the friendly relations between the voluntary patients and the physician and how cheerfully and implicitly they follow his advice and conform to the rules and regulations of the establishment, although they may not even suspect that there is any difference whatever between their own relations to the physician and those of the voluntary patients.

Now, since provision has been made for the care of the insane, apart from the great body of the patients received in general hospitals, certain classes of patients have been found who were not insane in any such sense as would justify a forcible deprivation of their liberty or of their civil rights, but yet who can be treated in immediate connection with the insane, better than either at their own homes or

elsewhere. The mental condition of these persons is an abnormal one which is on the borderline of well pronounced insanity, or in addition to this, their habits or their physical condition is such as will probably develop an attack of insanity unless suitable means are taken for their restoration to a state of health. They are in fact as insane as many of the patients in hospitals for the insane are during a considerable portion of their term of treatment, and need the same kind of treatment and surroundings. A question naturally arises in regard to a suitable provision for such patients.

An important element in the investigation of a question of this sort is the experience of others.

A letter was sent to the superintendents of most of the private hospitals for the insane in the neighboring States, making inquiry about their practice, experience and opinions regarding the domiciling and treatment of voluntary patients in immediate connection with the quiet class of certified patients.

A reply was received from each of the physicians addressed; and, without exception, these physicians stated that they did receive voluntary patients, and treated them in immediate association with their certified patients. All of them wrote favorably of the practice, and some of them expressed themselves very strongly in its favor. These letters are omitted for want of space; but the following extracts from the printed reports of two of them are especially worthy of attention, inasmuch as they express the well-marked opinion of the authors, and are entirely removed from all possible suspicion of having been influenced by a letter of inquiry.

The following extract is from the Annual Report for the year 1888 of Dr. John B. Chapin, Medical Superintendent of the Pennsylvania Hospital for the Insane:

"Several persons have been under treatment as voluntary boarders, who are suffering with nervous disorders or threatened with insanity. While the hospital may be willing to receive such persons if in a mental condition to comprehend the nature of the proceeding, without a medical certificate of insanity, no detention has been or can be legally exercised. It has seemed that in a population numbering one million, within a moderate radius, a number of cases in the incipient stages of insanity must occur annually who might be properly treated in the wards of this or some other hospital, and a more serious calamity might thus be averted. The knowledge that voluntary

boarders who have no fixed delusions and are not in a condition to be certified to be insane, may be received at their request for admission, and that the doors of a hospital may move inward and outward with equal ease, would do much to remove the ill-founded prejudices that exist in regard to hospitals for the insane. A tendency of recent years has been to surround the admissions to asylums with greater safeguards as to personal liberty, as if this were the principal question to be decided in the management of the insane, until the public mind has come to look upon a hospital or asylum for the insane as a place rather for the detention than for the curative treatment of the insane, and to which they are to be admitted only after the commission of overt acts. With a satisfactory lunacy law, such as we have in Pennsylvania, and its efficient and wholesome administration by the Committee of Lunacy, we shall hope that a more intelligent public sentiment may come to prevail."

The following extract is from the Annual Report for the year 1889 of Dr. Edward Cowles, Medical Superintendent of the McLean Asylum :

"The voluntary system, as it has been in practice here in the nine years since the enactment of the law establishing it, has yielded most beneficent results. It has not only been a blessing to the many patients who have gladly availed themselves of its benefits, but it has done good to the asylum itself in stimulating improvement in the care of all its patients. Many persons who are in the earlier stages of simple melancholia, or who have some one of the milder forms, or are in an early stage of mental disorder, are well aware of the nature of their illness, and yield readily and often gladly to the advice of friends or physicians to place themselves under special care. Intelligent patients appreciate the privilege of avoiding a formal examination and the dreaded declaration of insanity, and, therefore, with the voluntary system they seek hospital care earlier, and under the helpful influence of the consciousness that it is their own act."

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"The essential value of this system is that its success depends upon the active exercise of human sympathy and mutual confidence in the place of custodial restraint ; and not only are the conditions of 'moral treatment' rendered greatly more effective, but all who are concerned in these kindlier relations are lifted up by them. It is significant

that in the nine years' working of the voluntary law of Massachusetts so little criticism of it has been made, and so much good has come of it, of a kind that none but those who make use of it can properly appreciate.

* * * * *

"In the forecasting of what may be, another consideration of broad import that has long been held in mind may well be mentioned. The law bears fruit here that a new principle established in the conduct of affairs will, if a true one, evolve higher truths that in turn contribute to advancement. The voluntary system already described was established on correct lines; its workings here have evolved a breadth of moral results but dimly foreseen. More than these, patients, friends, and physicians alike have seized upon its provisions as a happy relief from the commonly felt 'stigma' of resort to an 'asylum.' Many suppose, and erroneously say, that there is a special and separate department here for the treatment of nervous disorders. This allays the repugnance to hospital care, and great good is gained because it is earlier and more freely sought. Let the truth this teaches be clearly seen; it is not a new asylum that is wanted, it is a new hospital. The McLean Hospital—for nervous and mental diseases, if this specification be needed—will be a fitting and inviting place, not only for the insane, but for a class of allied neurotic and mental disorders that are now repelled from such an asylum as this, where they can best be treated."

* * * * *

The following extract is from the "London Lancet" editorial of October 11, 1890, on a new Lunacy Act that has been passed in England:

"One advantage of the Act consists in the protection it gives to men generally who sign certificates of insanity; and another is that it allows persons wishing to place themselves under care and treatment to enter private asylums as voluntary boarders, without any order or medical certificate."

It is a fact that not only have voluntary patients been admitted to hospitals for the insane in the past, both in our own and in other countries, but that this practice continues to be favored; and not only this, but that in States and countries where these patients were formerly received in such hospitals without legalized procedures and without detention, certain methods of procedure authorizing a certain period of detention have now been legalized.

In the State of Massachusetts it appears that the law mentions only the State hospitals and the McLean Asylum in relation to the reception of voluntary patients. This was, undoubtedly, because the framers of the law presumed that there might be an obstacle to the reception of such patients in the State hospitals, without some form of permission or legalization, while no such permission was required in the strictly private hospitals; and this last inference would seem to be entirely logical and correct, however desirable it might be on special grounds that the form of legislation should also be extended to the private hospitals. Voluntary patients, however, are received and treated in immediate association with committed patients in all the private hospitals for the insane in the State of Massachusetts in like manner as they are in the public hospitals for the insane.

The recent passage of the English law regarding the reception of voluntary patients in private hospitals for the insane emphasizes the fact that throughout the civilized world measures are now being actively taken to remove those obstacles which tend to prevent the early treatment of the insane and of persons suffering from diseases which are liable to result in mental derangement, and also to relieve hospitals for the treatment of mental diseases from the stigma which unfortunately, but certainly, attaches both to these hospitals and to their inmates whenever legally declared lunatics only are admitted within their walls as patients.

It is true that a few superintendents of hospitals for the insane do choose to restrict themselves to the care of certified patients only, but this does not affect the main question in the least. As in any other calling, so in this, different physicians have different views and different ways of management; and within reasonable limits these differences in views and in management should be respected. And especially is this true in regard to private enterprises of any kind. Methods which succeed admirably with one may do badly under the management of another, either owing to differences in experience and temperament, or to varying conditions and circumstances.

Now, if it be conceded, as it is assumed must be the case, that certified patients in hospitals for the insane are not liable to be injured by association with voluntary patients; but that, on the contrary, they may and often do receive benefit from such association, there remain only three prominent objections that can be urged against the

admission of voluntary patients to these hospitals: first, on account of lack of room; secondly, because a suspicion might exist on the part of the public to the effect that the alleged voluntary patients were, after all, detained against their will; and, in the third place, because the law is supposed to require the restriction.

The first of these objections applies only to State hospitals for the insane. It is claimed, and without doubt correctly, that there is not room enough in these hospitals for the accommodation of those persons within the State whose mental condition and circumstances require their involuntary detention in a public institution. If this be the case, the restriction of the State hospitals to the reception of certified patients only is evidently a matter of necessity, however desirable it may be that accommodation be made in these hospitals for the reception of certain voluntary patients, as has already been done in other States.

But this objection does not apply to private hospitals for the insane; for a private hospital is not bound at any time to receive a definite number of patients. They simply have permission to receive a certain number.

The objection is understood to have been made that, inasmuch as the people are very jealous in regard to the preservation of the personal liberty of the citizen, there might be a suspicion that so-called voluntary patients were detained against their will if they were domiciled in the same building occupied by committed patients, and that the existence of such a suspicion would be prejudicial to the reputation and usefulness of the hospitals. Or, to put the objection in still stronger terms, if voluntary patients were to occupy the same buildings occupied by patients who were under legal detention, these voluntary patients might readily be detained against their will in like manner as the committed patients are detained.

There are several valid answers to this objection. In the first place, this suspicion has not yet been seriously expressed, and it may fairly be presumed that there is no likelihood of its being expressed in the future. Suspicions have often been expressed that committed patients have been unjustly committed, or that they have been detained after the necessity for detention had ceased to exist; but it is believed that no such charge has been made in regard to voluntary patients under treatment in licensed houses, although this practice has long existed and is constantly increasing. The legal penalties for the detention of uncom-

mitted patients are such as to avert not only the fact, but the suspicion even of their detention.

Even if expression should be given to the above-mentioned suspicion, this would not justify the adoption of measures designed to prevent something which has not taken place and is not likely to take place. Extraordinary precautions to avert an imaginary evil always have a tendency to increase the fear of that evil. If extraordinary and unnecessary regulations are adopted for the specific purpose of preventing the improper detention of persons in licensed houses, these measures will be in themselves liable to excite the suspicion that persons are improperly detained in these houses. It is the sharp distinction of the sane from the insane, the setting of them apart as an entirely different class of beings, their seclusion, the mystery that is made to surround them and their treatment, that causes suspicion; and so the treatment of voluntary patients in the same house or institution with them has a direct tendency to diminish rather than to increase any suspicions that may exist in the public mind.

A modification of the law of the State of Massachusetts on the subject may be suggested for enactment in the State of New York, in relation to the admission of voluntary patients at private hospitals for the insane.

The English law recently passed is reported as requiring even less formality than the law of Massachusetts, the theory seeming to be that the doors of hospitals for the insane should open easily, both inward and outward, to the end that early and preventive treatment may be encouraged, and that the sharp and invidious distinction and separation of the insane from the sane may be diminished, if it cannot be altogether abolished.

REVIEW OF LAWS REGULATING VOLUNTARY COMMITMENT OF THE INSANE TO ASYLUMS.

By WILLIAM D. GRANGER, M.D.

The legal and lawmaking mind can with great difficulty appreciate the possibility of residence in asylums except through rigid and fixed process of law by which the "rights of the individual are strongly guarded. The old idea that asylums are places of incarceration of the "furiously mad" is still too prominent, while the broad and true medical conception of asylums as a place for treatment and care

of the insane is dimly understood in jurisprudence or by the lawmaker.

Not only is commitment hedged about by strict legal guards, but the matter of discharge of patients is, in all public asylums at least, entirely in the hands and control of the asylum authorities. No interest of the patient, no desire of friends in any case, can receive any more force than these authorities are willing to give them.

It follows, then, that all who seek asylum treatment must be brought to the same level, and surrender entirely their personal freedom and largely the directing and controlling influence of their nearest relatives and friends.

It is of course true the larger part of the insane require involuntary commitment and detention, and strict forms of commitment are acknowledged to be necessary. There are, however, a large minority of the insane, or those near the border line, who seek the advantages offered in both public and private asylums, but who are unwilling to submit to legal commitment and unlimited detention. For this class the present laws are not sufficiently flexible. Such patients want to voluntarily enter and leave an institution, using the place as they would a general hospital.

Those who apply and might properly be admitted include cases of neurasthenia, of extreme "nervousness" and insomnia, those suffering from mental worry and fatigue, cases of grave hysteria, chorea and hypochondria, certain cases of epilepsy, many cases of "habit," border-line cases and threatened cases of insanity, cases of simple depression, mild cases of melancholia, cases of limited mental disturbances, such as some cases of *folia de deux*, nymphomania and moral insanity, also cases where commitment is desired and legal certificates cannot be made out.

Recognizing this growing demand for asylum treatment among a certain class, and also that it is safe to intrust them with the power of voluntary commitment, laws to this effect have been passed by several legislative bodies.

In the State of Pennsylvania the law permits the admission of voluntary patients for detention in asylums on their signing a request for admission, witnessed by a friend and approved by a physician of the asylum. The admission is for a period of seven days only, but is subject to renewal.

In the State of Connecticut a person may commit himself upon his own written application to any asylum in the State, but must be discharged upon a written notice within ten days.

In Massachusetts voluntary patients may be received into any public asylum, and into McLean Asylum upon their own written application. Such patients must be discharged upon their written application within three days.

The English Lunacy Act of 1890 provides for admission of voluntary patients or boarders into licensed asylums.

Permission is given, by personal request, in each case, signed by either two members of the English Lunacy Commission or by two justices. It is for a given time, subject to a renewed permission. At the end of the time mentioned in the permit, unless renewed, the patient must be discharged.

If at any time the patient makes a written request to leave, he must be permitted to do so within twenty-four hours.

These laws, while allowing voluntary commitment, also allow a limited detention, from twenty-four hours in England to ten days in Connecticut. In some States and institutions patients are simply received without any detention, the patient being allowed to leave any time he wishes to do so. This probably is in no case directly sanctioned by law.

In most States where voluntary commitment is allowed, the patient so committed is under the same State supervision as are involuntary committed patients.

By far the most instructive statement of the working of voluntary commitment is found in the last report of Dr. Edward Cowles, superintendent of the McLean Asylum.

He says: "It has been in practice here nine years, and has yielded most beneficial results. It has been a blessing, not only to many patients who have availed themselves of it, but it has done good to the asylum itself." "Many persons in the earlier stages of insanity or in the milder forms yield readily and often gladly to the advice of friends and physicians to place themselves under special care." He also speaks of the "moral treatment" being greatly more effective, and that success depends in all these cases upon the active exercise of human sympathy and mutual confidence, in place of custodial restraint.

He then speaks of the little criticism the law has called forth in the nine years of its existence, and says: "The voluntary system already described was established on correct lines; its workings here have evolved a breadth of moral results but dimly foreseen." "Let the truth this teaches be clearly seen: it is not a new asylum that is wanted, it is a new hospital . . . for nervous and mental

diseases, not only for the insane, but for a class of allied neurotics and mental disorders that are now repelled from such an asylum as this, where they can best be treated."

About one-third of those admitted to McLean come as voluntary patients. Forty-two such cases were admitted in the year ending 1889. Twenty-one were cases of melancholia, three mania, one "fixed ideas," four delusional insanity, one senile insanity, three secondary dementia, one paresis and six were not insane. These forty-two patients furnished eleven recoveries during the year, and of twenty-nine such cases from the preceding year there were five recovered, giving 38.1 per cent. of recovered on the admissions in that class in 1889. Seven were discharged much improved, seven improved, six not improved, five not insane and three died.

He speaks of an apparent impropriety in admitting so many classed as insane, and says: "These conditions often develop or become apparent upon observation after admission, and that they include a more or less doubtful class of cases for whose commitment attending physicians would not be willing to certify to insanity. It is for just such class of cases, near the border line, that the system is a great boon."

This report is interesting and instructive, because it takes the question of voluntary commitment out of the range of theory and speculation and places it upon the solid foundation of established and successful years of practice.

Dr. John B. Chapin, supt. Department for the Insane, Pennsylvania Hospital, after an experience with the limited voluntary commitment law of that State, urges in his last report an extension of its privileges, so as to broaden its usefulness. To quote his words. He says: "It seems that in a population of one million, within a moderate radius, a number of cases in the incipient stages of insanity must occur annually who might properly be treated in the wards of this and other hospitals, and a more serious calamity thus be averted. The knowledge that voluntary boarders, who have no fixed delusions and are not in a condition to be certified as insane, may be received at their own request for admission, and that the doors of an asylum may move inward and outward with equal ease, would do much to remove the ill-founded prejudices that exist in regard to hospitals for the insane.

Miscellany.

NOTICE.

An open competitive examination of candidates for Superintendent and First Assistant Physician in any of the State hospitals and asylums will be held at the rooms of the Civil Service Commission, Albany, N. Y., Thursday, March 5, 1891, commencing at 10 o'clock A. M.

A candidate for the position of Superintendent must be a citizen of the State of New York, at least thirty years of age, and have had at least five years' actual experience as a physician in a hospital for the insane.

A candidate for the position of First Assistant Physician must be a citizen of the State of New York, at least twenty-five years of age, and have had at least three years' actual experience as a physician in a hospital for the insane.

Application blanks may be had by addressing the Secretary of the New York Civil Service Commission, Albany, N. Y.

JOHN B. RILEY,

Albany, N. Y., Jan. 14, 1891.

Chief Examiner.

To the Editor of the "Journal of Nervous and Mental Disease":

MY DEAR SIR.—Kindly allow me to correct a statement wrongfully attributed to me in the report contained in your last issue, of the "Proceedings of the New York Neurological Society."

I am made to say, p. 57, line 14 from the bottom, "The Franklin interrupted current produced the effect of physiological tetanus. It, therefore, stood distinct and by itself, as capable of producing a result unattainable by either of the forms, galvanic and faradic."

That any one familiar with the subject could say that galvanic and faradic currents do not produce physiological tetanus carries its own correction in its absurdity. The statement is an inadvertance on the part of the reporter.

Yours, very truly,

WILLIAM J. MORTON.

19 East 28th St., New York. Jan. 27, 1891.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

CEREBRO-SPINAL CONCUSSION.

By JOHN FORD BARBOUR, M.A., M.D.,

Consulting Neurologist to the Louisville City Hospital; Lecturer on Nervous Diseases and Clinical Medicine in the Hospital College of Medicine, Louisville, Ky.

THERE is hardly a subject in medical jurisprudence concerning which greater confusion and more erroneous ideas prevail in the mind of the medical profession than exist with regard to cerebro-spinal concussion. The reasons for this are not far to seek. At present there are in the English language, so far as I know, only three systematic treatises upon this subject. That of Erichsen was written over twenty years ago, and contains many errors. Page's work was so evidently written to combat Erichsen's as to be untrustworthy. The recent treatise of Clevenger, of Chicago, on this subject, while admirable in many respects, is at times obscure and prolix.

Valuable articles have appeared from time to time in the medical journals; but these are well-nigh inaccessible to the great mass of the profession. Another reason for the mistiness of the medical mind in this direction is the plentiful lack of instruction in neurology in our medical schools; for there are not half a dozen in the country in which instruction in this department amounts to more than a semi-occasional clinical lecture.

A case which excited considerable interest in this State was pronounced to be spinal concussion for the very novel

Read by title to the Mississippi Valley Medical Association, Oct. 11, 1890.

reason, that when the blade of a penknife was stuck into the sole of the foot, the patient did not wince.

A prominent specialist in other lines informed a young lady of my acquaintance that the way to detect feigned spinal concussion was to have the patient cross his legs, and when he was not looking for it, to strike him on the patellar tendon. If his foot kicked he was a malingerer. Surely the early neurological education of these gentlemen had been sadly neglected.

I propose in this paper to present as briefly and clearly as I can the modern idea as to what constitutes cerebro-spinal concussion.

First, concerning the name. Cerebro-spinal concussion seems to me the most appropriate term for the condition under discussion. *A priori* it is almost impossible to have spinal concussion without cerebral concussion. Moreover, the symptoms of this condition are largely cerebral, as we shall see. Seguin prefers the term "traumatic neurosis," but this seems somewhat too indefinite. He admits, besides, that there may be no trauma, strictly speaking; and it is by no means established that it is merely a neurosis.

Clevenger has proposed to call it "Erichsen's Disease;" but this manner of naming affections is objectionable on many grounds, and neurology is already overburdened with such appellations.

As to the etiology of this complaint, it occurs most frequently, but by no means exclusively, from railway accidents. When one thinks of the tremendous force which rives oak and steel to splinters, when one views the hurly-burly of a railway wreck, the great wonder is that there are not forty times more cases of cerebro-spinal concussion than there are.

What are the predisposing causes to cerebro-spinal concussion? Very little is said on this subject, yet manifestly there must be some such causes; for out of the hundreds of people who are jolted up in railway and other accidents, very few develop this condition.

Putnam makes the following statement, in a paper entitled "The Medico-Legal Significance of Hemianæsthe-

sia after Concussion Accidents": "Neither is a very neurotic temperament a necessary condition. In only one of these cases was this present to any marked degree."

Out of sixteen cases where any mention is made of the state of health previous to the accident, eleven were perfectly healthy and five were neurotic. I have myself had a number of cases in which there was no family nor personal neurotic history.

Seguin says: "The escape of persons who are asleep at the time of a railway accident from the symptoms of traumatic neuroses is admitted by all writers, and should exert a powerful influence on our judgment of the pathology of the affection." Clevenger disputes this, and quotes two cases of his own in which cerebro-spinal concussion occurred during sleep.

Charcot alludes to the fact that slight accidents may serve to bring on apparently severe symptoms in those predisposed to neuroses.

Oppenheim is inclined to attach some importance to alcoholism as a predisposing cause. Rigler thinks that railway officials are predisposed to the development of cerebro-spinal concussion by the constant jar to which they are subjected. There are no statistics on this point.

Auto-suggestion plays a prominent part in the etiology of this affection; these patients are as prone as a hysterical woman to take on suggested symptoms.

Seguin has called attention to the injurious influence of sympathetic care and coddling.

The physician should bear it in mind that railway accidents are by no means the exclusive cause of this condition. This caution is not a superfluous one, for I have known of a number of cases in which the physician groped about blindly and gave far too favorable a prognosis, simply because there was no history of a railway accident.

There is nothing *sui generis* nor pathognomonic about the symptoms of cerebro-spinal concussion. A fairly good imitation may be produced by the prolonged use of the bromides. Without the history of the accident no one could tell that there had been one. The symptoms vary

so much that it is hardly possible to describe a typical case. It is an absurdity to talk about making the diagnosis in these cases from the objective symptoms alone. No mortal man can do so.

A convenient division of the symptoms is into cerebral and spinal.

Under the head of cerebral symptoms, we notice a state of depression, brooding hypochondriasis, loss of the power of voluntary attention. This last symptom is usually well marked and characteristic. Any effort requiring fixation of the attention for longer than a few minutes is exceedingly irksome and is apt to induce unpleasant head paræsthesiæ, such as a sensation of a tight-fitting cap or a dull, indescribable discomfort. Insomnia is nearly invariably present.

Speech is more or less impaired, varying from slight hesitancy to a condition of mild amnesic aphasia.

The patient becomes peculiarly susceptible to the influence of alcohol; in my experience it produces an unpleasant effect, a dull sense of confusion and discomfort.

There is a state of psychical sensitiveness and morbid emotionalism. The sight of a funeral or the account of an accident will throw these patients into profound despondency.

Impairment of memory is a very constant symptom. This impairment is most pronounced with regard to recent events. The patient will usually remember all the minute details of the accident, and will repeat them over and over to you at every visit.

There are certain symptoms which may be either cerebral or spinal in their origin. These are: hemianæsthesia, analgesia, — hyperæsthesia, — hyperalgesia, — paræsthesia, which are probably cerebral, and general muscular lassitude, which is probably spinal.

Among the purely spinal symptoms are: girdle sensation, disturbances of the gait (slight incoördination, dragging of affected leg), disturbances of the bladder and rectum (not often marked), and of the sexual functions, rigidity of the spine, etc. These symptoms are found in all possible varieties of combination and degrees of inten-

sity; none of them is in any sense pathognomonic of this condition. One should take a bird's-eye view of these cases. Only one who has had considerable experience in dealing with other forms of nervous disease can appreciate the *tout ensemble* of the symptoms. The general practitioner usually loses the perspective effect of the whole by viewing the case too nearly. He pins his attention to a few prominent symptoms, and overlooks, generally through ignorance, a whole host of others. It is as if one should attempt to obtain a correct idea of a large and irregular building by getting very close and carefully examining the front door.

The pathology of this affection is as yet perfectly obscure. Nothing is more fascinating or more fallacious than *ante mortem* theories of neural pathology. Few *post mortems* have been held, and they have thrown no light upon the subject.

Erb is inclined to consider it due to "molecular disturbances," whatever that may mean.

Some have thought that there is a slow interstitial increase of connective tissue throughout the cord.

Seguin considers it a neurosis.

The most likely hypothesis is that advanced by H. Fischer, advocated by Scholz, and recently worked out in detail by Clevenger, viz.: that it is due to disturbed vaso-motor innervation of the brain and cord. Erb says that "it is hard to understand why, in so severe a shock, the vascular nerves alone should be paralyzed, to the exclusion of the other nervous elements." But this is merely an *a priori* objection, such as might readily be urged against any view that might be advanced. It remains true, however, that there be "vaso-motor cranks" who attribute everything under the shining sun to some "vaso-motor disturbance."

Concerning the diagnosis of this affection, given the history of an accident, it should be remembered that a number of conditions may result. These have been admirably summarized by Seguin in the following table:

Injuries to the nervous system without evident gross lesions; physical and psychical shock.

Immediate symptoms.	<ol style="list-style-type: none"> 1. Transitory paralysis. 2. Diabetes. 3. Amnesia. 4. Traumatic neuroses. <ol style="list-style-type: none"> (a) Psychic. (b) Hysteroid and neurasthenic. (c) Local or neural.
Later or secondary symptoms.	<ol style="list-style-type: none"> 5. Paralytic and atrophic symptoms (sclerosis and progressive muscular atrophy); dementia paralytica; epilepsy. 6. Pott's disease of the spine; cerebral tumors. 7. Malingering.

It would be well to keep this table before one when examining a case of this sort.

One very serious hindrance in diagnosing these cases is the large number of erroneous statements contained in the works usually consulted. Especially is this remark true of treatises on surgery. A bull in a china shop is not a marker to a surgeon dealing with a neurological question. Erichsen describes many cases which are not at all neuroses. This fact seems to me an insuperable objection to Clevenger's proposal to call this affection "Erichsen's disease." To do this would be to throw everything into hopeless confusion and to do away with the results of all the investigations of the last twenty-five years along this line; for every physician who had a case in the least like any one of those described by Erichsen, would immediately pronounce it to be "Erichsen's disease."

As to the electrical diagnosis, it is sufficient to remember the dictum of Strümpell, that in this affection the electrical reactions are merely quantitatively altered. When they become qualitatively altered you have some other condition to deal with.

In conclusion, by way of showing what is and what is not cerebro-spinal concussion, and how closely it may be simulated by other affections, I will report some cases that have come under my observation:

CASE I. (Reported in the "Medical Progress," March, 1890.) Captain C., a fireman, while at a fire, was standing on a ladder helping to direct the nozzle of a hose. One of

his subalterns let go the hose, and the nozzle struck the captain immediately over the right eyebrow, inflicting a horizontal wound about an inch and a half in length. The water passes through the hose of a fire-engine with considerable force, three or four men being required to direct the stream, so that the blow was a severe one; nevertheless, he was not knocked off the ladder nor rendered unconscious. He came down from the ladder and walked a few squares to the office of a physician, where the wound was sewed up. Feeling no ill effect from the blow, except that he was somewhat stunned, he wanted to go back to the fire, but at the advice of the physician he returned home. The wound healed readily, and in a few days everything was going on as usual.

About five months after the accident a train of obscure nervous symptoms set in. He was restless in his sleep; he could not fix his attention on anything long without causing an unpleasant sense of fullness in his head; he felt as if thousands of insects were crawling up his left leg; he did not like to go about in the evening, because he "did not feel sure of himself after dark."

One day as he was riding to a fire, he suddenly became completely hemiplegic, and came near falling off the platform of the fire-engine. There was complete loss of motion and sensation in the left side, extending to the face and head. This lasted a few minutes and then disappeared as suddenly as it had appeared. After this he had these attacks quite frequently. Sometimes he would have several of them in a day, and then he would not have one for a week. They never lasted over twenty minutes, and consciousness was never in the least affected during them. He described to me the curious sensation of waking up in the night and feeling as if half of his body were gone and crawling over in the bed hunting for the missing half. He came under my treatment about a year and a half after the accident, through the kindness of Dr. Underwood. At first sight he had every appearance of health; he was ruddy in color and was a fine specimen of physical development. But on examining him more closely, I noticed a certain indescribable look of vacillation and incertitude in his eyes, which I believe is quite characteristic of such conditions. He seemed incapable of looking at me steadily for any length of time; his eyes would falter and his glance would fall. At this time he no longer had the singular hemiplegic attacks. His pupils were somewhat dilated; they were even and responded well to light. The patellar

reflex was slightly exaggerated. He staggered in his walk and had a tendency to gravitate toward the left. There was no wasting of the muscles and no abnormal disparity between the right and left sides.

Mentally he was in a state of mild chronic depression and hypochondriasis. His face wore a constant look of vague foreboding. There was still some incoördination; on rising from a chair he would spread his feet apart and sway slightly before starting off. Vesical, rectal and sexual functions normal. He was still unable to fix his attention on anything for long, and the look of anxiety on his face would become almost pathetic when he tried to do so. When he became interested in talking about his favorite theme, the intrigues and trickery of the city politicians, he would become quite animated, and his depression would almost disappear. He improved somewhat under central galvanization and ergot; but I was unable to benefit him permanently because of the character of his occupation. The firemen are aroused from sleep by the stroke of an electric gong. No other sound awakens them; but when this gong strikes, each man springs up as if the electric current had passed through him. The effect of this upon cerebral circulation and nutrition can easily be conceived. He left me with a promise to change his occupation. He has since died, having fallen a victim to the grippe.

This I consider a somewhat anomalous case of cerebro-spinal concussion.

CASE II.—*Sexual hypochondriasis combined with neuritis.*

T. M., a young man who worked in the L. and N. shops as a blacksmith, while lifting a heavy bar of iron, felt a sense of giving away in his lumbar region. He stopped work for that day, but resumed it next day, and continued it for several weeks, in spite of a growing distress in his back.

About three months after the accident he came under my care. I found the lumbar muscles wasted; the patient swayed his shoulders back and protruded his belly, somewhat like a child with pseudo-hypertrophic paralysis. There was tenderness on deep pressure in the lumbar region. Sexual functions much disturbed. He admitted previous sexual excesses. Some vesical weakness. The lumbar muscles responded very slightly to a strong faradic current. Marked insomnia; head paræsthesiæ; fibrillary twitching in the affected muscles, which became more pronounced when he assumed the recumbent posture.

Mentally he was depressed and fearful. The slightest twitching in his back would throw him almost into a frenzy. Pupils sluggish; patellar reflex slightly exaggerated; hang-dog expression of countenance. In spite of warnings he attempted sexual connection, had a premature ejaculation attended by shivering, and came back next day "all broke up." He improved rapidly under the use of electricity and sulfonal. I went out of the city during the summer and so lost sight of him.

CASE III.—G. F., a young lady 16 years of age, was on her way to spend the holidays with some friends, on the 24th of December, two years ago. There were two trains that left the city that morning on that road. The first was an accommodation train; the second was an express train that overtook it about thirty miles out. She boarded the first train, and had been on it but a short time when the second train ran into it. She was in the second car from the rear. Engine No. 2 split the hindmost car into halves, knocked off the smokestack and the front end of the boiler, ran a third of the way into the penultimate car, and deluged it with steam. The girl felt a slight jar, followed by a violent crash, which jerked her forward, then backward. She did not strike her spine against anything. Wrapping her cloak about her head, she crawled under a seat, and remained there some time until she was taken out by some one. She was burned about the face, nose, throat and ears by the steam; she did not at any time lose consciousness, and was able to return home that day.

In November, action was brought against the road to recover damages. Two days before the trial, at the recommendation of Dr. Dudley S. Reynolds, her attorney requested me to go out and examine her and be present at the trial as a witness.

I had her go regularly to bed so that I might make a thorough examination. Neither her parents nor her physicians were allowed to tell me anything about the case until I had examined for the objective symptoms. These were as follows: She had the same pathetic look out of her eyes that I noticed in Captain C.'s case. I believe that there is a diagnostic *facies* in such cases.

The patellar reflex was absent on both sides, but no special importance is to be attached to this, for the reason that it is absent in a small percentage of normal individuals, variously estimated by different observers. Hufschmidt has found it wanting in health in 5 per cent.; Eulenburg in

4.20 per cent.; Berger in 1.56 per cent., and Feilkchenfeld in 1.3 per cent.

On looking at me steadily, which was quite irksome to her, her pupils contracted and dilated in curious wise.

The heart was quite irregular in its action, her pulse beating like this — — — — — - - - - -
When she got up to walk, she spread her feet apart and balanced herself before starting. This showed disturbed co-ordination.

Examination of sensation was negative.

There was no abnormal inequality between the two sides of the body in size.

Dr. Reynolds informed me that she had an involuntary evacuation of the bowels while in his office. This, to my mind, was strongly against its being a case of hysteria.

From her parents and physicians I then obtained the following history: She had made a good recovery from her burns, owing to the excellent care of her attending physician, and had gone on pretty well until June, when she began to be nervous, her sleep was poor, she became very irritable and moody, whereas before the accident she had been unfailingly good-tempered and cheerful. Her memory was feeble, she could not apply herself to anything, she was very low spirited.

I was convinced of the sincerity of the girl by her persistent denial of thrice iterated questions as to symptoms concerning the relative importance of which she could know nothing. The ignorance of her parents of the real points at issue was shown by their dwelling upon the primary symptoms, the burns, etc. Her health had been perfect up to the time of the accident. She weighed some twenty pounds less than usual, but did not look emaciated. Erichsen calls attention to the fact that in such conditions there is wasting of the muscular tissue, but no loss of subcutaneous fat; hence the absence of emaciated appearance.

There was a steadily progressive character about the case very unlike hysteria. There was also an absence of hysterical emotional disturbance. While I was examining her she was perfectly quiet, somewhat listless and sad.

When she went on the witness-stand, she did the best thing possible—broke down and cried. This floored the jury completely.

I asked her afterward, jestingly, if her attorney had not advised her to lachrymate, but she denied it flatly.

She was awarded \$10,000 damages. There has been no improvement in her case since the verdict.

CASE IV.—Susan Taylor, aged 35, entered the City Hospital September 28, 1889, when the following history was recorded in the case book: She had a fall on her back several years ago, and complains of great pain in it now at times, is very hysterical (?), and complains of pain all over her body. Examination of her back showed no deformity; complains of pain wherever touched.

I saw her in September, 1890, and obtained her further history: She was of neurotic temperament. She was leaving a street car at the time of the accident, when her dress caught and she fell, striking squarely upon the lumbar region. She felt no marked inconvenience at the time, but some months afterward spinal symptoms developed. She felt weak in her knees, was easily tired in her legs, had vague pains in her trunk and legs. Things went on from bad to worse, until at last, when I saw her in the hospital, she had a typical case of locomotor ataxia—loss of patellar reflex, iridoplegia, girdle pain, lightning pains, etc. The morbid process evidently extended to the lateral columns, as there was a decided spastic element present. She had diplopia for several weeks before she died.

No doubt there was a time early in this case when, with such a history, it might readily have been confounded with cerebro-spinal concussion. Locomotor ataxia as the result of trauma is, I believe, very rare.

CASE V.—Edward F., aged 30, an engine-driver, was first seen by me August 27, 1890. He gave the following history: He was in a railway accident September 18, 1888, when he was struck in the epigastrium by the handle of the air-brake. In consequence of this he laid off for six months, during which time he felt constant pain in his stomach, most marked after eating; had no other symptoms. He went to work again. Being born under an unlucky star, he was in a collision, February 14, 1890, between a freight and a passenger train, both going at full speed. Patient was thrown head first through the cab window, and fell in the ditch by the side of the roadbed. The top of the baggage-car of the train with which he collided fell upon him and imprisoned him for four hours. He struck upon the left side; right fibula was broken just above the ankle; never lost consciousness; no mark of the accident afterward; has fallen off from 187 to 163 pounds; does not look

emaciated; characteristic facies. He sleeps, on an average, five hours a night; appetite poor; bowels constipated; sexual functions normal; pain in recti-abdominis muscles—more marked on the left side, worse after eating (from pressure of distended stomach?) and in damp weather; general muscular lassitude; walks like an old man; very temperate; low-spirited at times; loss of business ability. Pupils dilated, uneven; the left pupil is the larger, and responds very slightly to light; left patellar reflex diminished, nearly extinct; right, normal. He talks to me and I talk to him as if he were about ten years old; he “smears” the terminations of words. Thus, wishing to say to me, “Well, sir, I tell you I slept good last night,” what he said sounded like this: “We’, suh, I te’ ye’ I slep’ goo’ las’ ni’,” pronounced with a slow drawl. He shows what may be called an excess of religiosity; reads the Bible almost constantly, going straight through the long chronologies of those worthies whose simple life-record is that they begat—bad symptom in a workingman. He is in a state of abnormal (?) subjection to his wife.

He has been under treatment for about three months—sulfonal and local and general electrization. He has gained five pounds; sleeps well without any hypnotic; his bowels are regular; appetite good; is stronger; walks more briskly and with more elastic tread; countenance shows more animation; still complains of a little pain in the left side; is able to pursue a light occupation.

THE ACTION OF COLD ON THE PERIPHERAL NERVES.

Dr. G. Alonzo, in the “*Riforma Medica*,” reports the results of his investigations in testing in rabbits the action on the peripheral nerves of cold applied to the skin. Microscopical examination of section of nerves, taken from a position immediately underlying the skin to which the cold was applied, showed a marked change in the nerve structures. The medullary sheath was lifted by the migration of leucocytes from the surrounding blood-vessels and the axis cylinders were distorted and separated by the interposition of the leucocytes. There seemed to be no change in the white substance of Schwann. (*Medicinische Revue*, November.)

B. M.

TWO CASES OF EPILEPTIFORM CONVULSIONS IN EARLY INFANCY.

BY HELEN W. BISSELL, M.D.,
St. Paul, Minn.

TO every physician in active practice, come obscure cases of disease, the etiology of which we are in doubt, that we treat on general principles, and are happy to see recover when everything seems unfavorable. The following cases—one of which occurred in the practice of Dr. Hartland C. Johnson, of St. Paul, and the other during my term of service as resident physician in the New England Hospital—will, I think, emphasize this point.

The history of Dr. Johnson's is as follows: On June 19, 1890, there was born to healthy and intelligent parents a boy who seemed in every way perfectly well, and who showed no untoward symptoms until he was a week old. Then his mother reported that he had had two or three "spells" during the night. One occurred during the doctor's visit, and began with a slight twitching of the right hand, which gradually extended over the whole of that side. This was followed by a sort of hiccough and twitching and jerking of the mouth and throat, producing a regurgitation of food mixed with mucus, and finally ended with a drawing of the head rigidly backward and to one side. The muscles then relaxed, and the child cried for a few moments. After this it took the breast and appeared well. These convulsions grew more frequent, and the next day they occurred about every two hours, and were more general and severe; both sides of the body were attacked, always beginning with the right and ending with the left. There was spastic contraction of all the muscles, the head drawn back, eyes twitching, with the corneas turned up, the skin becoming livid and the throat and mouth filled with frothy mucus. These spasms lasted two or three minutes. There was with each attack a slight discharge of fecal matter. The patient became much exhausted after each spasm, but did not

at once fall asleep. The convulsions gradually increased in frequency from day to day.

On the third day from the beginning of the attacks, there were five or six thin, and moderately copious passages from the bowels, and a mixture, containing bis. subnit., tinct. opii deod., was given, and two days after the stools were normal. To control the convulsions, sod. brom., two grains, was given daily, in divided doses at first, then the amount was increased until he was taking ten grains in the twenty-four hours.

On July 3d he had 70 convulsions in the twenty-four hours; on the 4th, 75; on the fifth, 79; on the 6th, 80. On the 7th the intervals began to lengthen, and there were only 50 on that day; on the 8th, 8 lighter convulsions occurred. These were the last general spasms, although there was a nearly continuous twitching of the muscles of the right hand, which gradually disappeared during the next five days.

During the entire period the patient took nourishment well, its appearance remained good, and its weight increased nearly two pounds. Total number of recorded convulsions, 366. The child has remained entirely well since that time, and now, at six months of age, seems a bright, healthy baby.

The second case, which came under my care, was that of the child of Mrs. L. C., a woman of a markedly fine appearance, and who seemed entirely well. She stated she had had nervous prostration, and since her marriage would occasionally sink into a comatose state, when she could see and hear, but was unable to speak or move. Her labor was short and in every way normal, but as soon as the pains became severe she lost control of herself, and her conduct was that of a person suffering from acute mania. Ether during each pain, only partially controlled her manifestations. The boy—who weighed eight and a half pounds—cried at once, and appeared to be a normal child. The greatest circumference of his head was 41 cm.

During the first week he lost half a pound in weight, and during the second gained one. When two days old,

a slight suppuration appeared around the nails of three fingers of his right hand, around one on the left and the great toe of the right foot. There was a marked jutting out of the occipital bone, giving an unusual prominence to that part of the head. This with an inability to freely open his eyes, were the only peculiarities noticed. About the middle of the third week, the mother said the child's hands twitched, and, bearing in mind her previous condition, special attention was paid to the child, and his food and general health carefully watched.

On the morning of October 26th he had a well-marked convulsion, and two in the afternoon. He did not cry as much as usual, and slept the greater part of the time. There was a fourth convulsion during the night, and, fearing that his mother's milk did not agree with him, he was given peptogenic milk powder instead.

At first the convulsions attacked principally the hands and arms. One of the fingers would be folded over the right thumb, then the face would become congested, and as the muscles became involved, the head would be thrown back. As the convulsions increased in severity, the head would become more and more retracted.

On October 27th the form of the convulsions changed somewhat, and continued of the same character during the remainder of the illness. The right hand would become markedly congested and begin to twitch, then the face and head turn red, the muscles become convulsed and the head retracted. As the spasm would pass into the reddening left side, the right hand and foot would pale. The feet were frequently, but not always, convulsed.

During the attack, respiration was at times impeded, there being twenty to thirty seconds between the acts; occasionally there would be a minute when the child did not breathe. At no time was there strabismus, and the pupils contracted equally. On the first day he kept his eyes open more than at any previous time.

As soon as his condition became marked he was put in a room by himself, and laid in a bed so wrapped up that he

need not be moved, as his state appeared to be aggravated by disturbance.

A special nurse was appointed to care for him, and the length of each convulsion noted from a watch that lay open on the bed.

At 8.30 on the morning of October 27th his temperature was 97° , pulse 120, and he began to have green and undigested stools. He was given ol. ricini and a small dose of sod. brom. Until 6 P. M. he had three convulsions, varying from three to ten minutes in duration. His temperature was then 98.8° . During the next three hours he had five spasms, varying from one and a half to five minutes in length, when, his head feeling hot, an ice-bag was applied.

From that time on he was given chl. hydt., a half grain, pot. brom., two grains, about once in two hours—by mouth if he would take it, otherwise by rectum. Up to midnight he had nineteen spasms, the longest of which continued ten minutes.

On October 28th, from midnight until noon, there were twenty convulsions of shorter duration, but some of them very severe. The ice-bag was discontinued, as his head was cooler. The fontanelles were tense, and measurement showed that the greatest diameter had increased from 41 to 44 cm. During the next six hours all symptoms increased in severity. During the convulsions, respiration would be much impeded; once for ten minutes he hiccoughed every five seconds. When not convulsed, respirations were irregular and about sixty per minute. Up to midnight he had twenty-six spasms.

October 29th passed very much like the preceding day, the only change in treatment being the substitution of peptogenized milk for peptogenic milk powder. He had thirty-five spasms during the twenty-four hours.

During October 30th his bowels acted well, and every vestige of intestinal irritation disappeared; but the convulsions continued with unabated vigor, there being forty-six during the twenty-four hours. The greatest number that occurred at any one time was fifteen in two hours.

On October 31st the attacks were not so frequent, and were irregular, both as to severity and duration. There were thirty-seven up to 10 P. M., when suddenly, after having thirteen in an hour and a half, they disappeared with as little apparent cause as they had come on. The baby cried frequently after the attacks the last day and showed increased restlessness.

From the first he seemed normal in every way between the attacks except for such drowsiness as might be accounted for by the chloral and bromide taken.

The fontanelles continued moderately tense and the bones widely separated for two days after the convulsions ceased, when the pressure seemed relieved and the measurements were less. The total number of convulsions for four days was 183, and during the time the boy gained one pound in weight, and seemed none the worse for his stormy time.

Eighteen months later I heard from the father that his walking and talking had been delayed by a severe and long-continued digestive trouble, but at that time he was fat and happy, and seemed as healthy a boy as could be found.

INFECTIOUS MULTIPLE NEURITIS FOLLOWING FACIAL ERYSIPELAS.

In the *Neurol. Centralbl.*, Dec. 1, 1890, Dr. Leu reports the following case: The patient, 35 years old, had just recovered from an attack of facial erysipelas. Two days later his temperature rose, and he complained of paræsthesia in the legs, with pain and tenderness in the muscles and nerve trunks. The same symptoms soon appeared in the arms. There were also diminution and then disappearance of the patellar reflexes, changes in the electrical excitability of the muscles and nerves, albuminuria, rapid pulse, enlargement of the spleen, dyspnœa, glossy skin and hyperidrosis. Intestine, bladder and cerebral nerves intact. Herpes and miliary eruption on the breast, abdomen and back. Temporary glycosuria. The acute stage lasted two weeks and was treated with salicylate of sodium, antipyrine and opiates. Electricity and massage were then employed and at the end of three months the patient was almost entirely well.

A CASE OF MYXEDEMATOID DYSTROPHY (PARATROPHY).¹

By FREDERICK P. HENRY, M.D.,

Physician to the Philadelphia Hospital and to the Jefferson Medical College Hospital.

I N accepting the invitation of this Society to report a case now to be found in one of my medical wards at the Philadelphia Hospital, I deliberately place myself in a rather anomalous position. If, it may be asked by one of my neurological colleagues, the case is one of nervous disease, why is it not in one of the wards devoted to such affections? If, on the other hand, it is not a case of nervous disease, why is it reported here? To these imaginary questions I feel justified, at this time and in this place, in returning the same answer as was made by Horatio to Hamlet in reply to the speculations concerning the base uses to which the dust of Alexander might have returned: " 'Twere to consider too curiously to consider so."

To argue, at this time, that the case is not one of nervous disease would be to violate one of the golden rules of etiquette, which is somewhat coarsely expressed in English in the proverb concerning the gift horse, and much more elegantly by a Latin writer of the fifth century: "*Equi donati dentes non inspiciuntur.*"

I will, therefore, say no more concerning the nosological status of this case, although, as may be surmised by the fact of my retaining it in my ward, the line of argument last referred to is the one with which I am most familiar. I am, however, prepared to defend either position.

With reference to the term "dystrophy," I would say that I have adopted it in order to bring this case into the same category with the very similar one reported by Dr. F. X. Dercum in the University Medical Maga-

¹ Read before the Philadelphia Neurological Society at the December Meeting, 1890.

zine for December, 1888. It seems to me, however, that the term *paratrophy*, which would indicate etymologically a deviation from, rather than a defect of, nutrition, would be much more appropriate. It would also have the advantage of being homologous with such well-established terms as paræsthesia, paranoia, etc.

The following complete and concise notes were compiled by my recent resident physician, Dr. Alfred Stengel:

Ellen W., 63, white, born in England.

Family History.—Father died of alcoholism at middle life. Mother at 28 of œdema of brain as determined by post-mortem. Two brothers and a sister living. One brother younger than patient; the other two are older. The younger brother when a child was "peculiar"—he would run to people in sudden fright and say he was drowning or the like. He is now living, apparently well mentally and physically, but a heavy drinker. He has a contracture of the ring finger (much like patient) and cannot move the finger. He has nine children, all of whom are well. The older brother has always been well, but suffers with periodical violent headaches, which put him in bed. Since he was a young man he has suffered also with constantly cold feet—this so severe as to disturb sleep and cause great distress. He had five sons and two daughters. One of the sons died of tetanus from treading on a nail. The others all well, but one of the daughters has a deformity of the middle finger of the right hand exactly like that seen in our patient. This, first noticed 4 years ago, has been steadily progressing. It has never given any pain or discomfort.

The only sister is living, 65 years old and healthy. No children.

Previous History.—Does not remember having the ordinary diseases of childhood, and was considered a healthy child. At early infancy began to have fits, which at times were of daily occurrence, at other times as much as a week or more apart. Consciousness lost during the fits and followed by great pain in the forehead. She was able by this pain to tell whether she had had a fit at night. After fits, slept. During this time was relieved of lumbricoid worms—vomiting them; and some time later recovered from the fits. The fits lasted some time after discharge of the worms, but gradually subsided.

Was married at 17, and lived with her husband 24 years. Had two sons, the older of whom is 40, and has seven

healthy children ; the younger died at 2 years, of hemorrhagic diarrhœa. She had no miscarriages and no stillbirths. A short time before she left her husband, he had some sort of venereal disease, as a result of which there was ulceration and destruction of the skin of the penis and scrotum—a serpiginous or phagedenic condition, no doubt. There were no secondary symptoms. She herself was examined about the same time by a doctor, and was told she had not acquired the disease. A year later, however, she had sore throat, with white patches.

Was an immoderate drinker from the time she was a young woman until within six or seven years. During the latter part of the time had a saloon in California, and was a very hard drinker, taking beer and whiskey. Never drunk early in morning, but for weeks at a time was intoxicated every night.

Menstruation began at 11, and continued regularly and without trouble till she was 35, when it stopped abruptly. Lost an unusual quantity of blood, but suffered no discomfort.

Fifteen years ago had several ribs on the left side broken by a fist blow.

History of her Present Disease.—Her malady began about fourteen years ago, when she was 49 years old. At that time she was living in California. The first thing noticed was a constant feeling of coldness about the knees, followed by swelling which gradually increased. At first she thought the swelling, was due to her growing fat, but later was astonished to see that there was a localized mass on the inner aspect of each knee. At the same time there was dull, aching pain in the affected parts. Later the right arm became involved, a mass growing out on the outer side over the triceps, and enlargement of the body was noticeable from the fact that her stays became too small for her. During this time, while still in California, her inability to perspire except at the Turkish bath was marked, and was part of her reason for coming east. Since she has been in Philadelphia has not had the lack of perspiration so marked as before. Various plans of treatment did not seem to influence the progress of the disease. Five or six years ago, in this city, injections of chloroform were made into the tumors on the inner side of the knees, but no good was done, while painful ulcerations were the result of the puncture, and scars of considerable size mark their location now.

About four years since a slight swelling in the epigastric region first appeared. This increased somewhat in size and

resembled the breasts in shape, but has since spread so as to involve nearly the whole of the abdomen.

From the knees the process extended to the thighs and gave rise to the large masses on their outer side and about the hip.

No swelling was ever noticed about the face or neck, but now she thinks the tissues of the neck are growing fuller.

Pain has never been a well-marked feature of the disease, but at various times she has suffered with pains apparently situated in the enlarged tissues, or running down the limbs. Sometimes these attacks have been fairly well localized, in one limb, in one side or about a joint.

Five years ago her attention was called to a peculiar condition of the right hand. The last phalanx of the second finger began to be fixed in a flexed position, while the end of the finger appeared to be growing somewhat smaller. Later the remaining fingers of this hand became involved and all the phalanges deformed. The deformity as seen now is flexion of first phalanx—marked over extension of second and half flexion of the third. There seems to be at the joint between first and second phalanx more or less complete luxation, the ends of the bone seemingly covered only by skin. The thumb of this hand is stiff as are the fingers, but all its joints are flexed. For some time she has noticed the thumb of the left hand becoming like that of right, and says the metacarpo-phalangeal joint of its first two fingers feels much as did the joints of the other hand at the beginning.

A year ago patient had a quasi-rheumatic attack affecting the deformed hand and the arm. She says herself that the pains seemed to run up and down in the arm rather than about the joints.

Some months ago had pneumonia of the right lung and made a good recovery.

Has never had any urinary trouble, as far as she knows.

Eyes always seemed well. Sees well with her glasses.

For several months past has had slight uterine hemorrhages at times, associated with which were dull, aching pains, resembling those formerly felt before menstruation.

The following tests of sensation were made by Dr. Charles Walter, of the Philadelphia Hospital :

Examination of Ellen H.—Reveals generally lessened and sluggish sensation. There is slight analgesia and diminished temperature and tactile sense. She can locate

impressions, but cannot distinguish the points of the æsthesiometer even when separated for several inches. There seems to be no abnormality of the sense of weight.

The following facts were learned ;

1. The changes of sensory acuteness were not more marked over the distribution of any of the cutaneous nerves, but seemed dependent entirely upon the amount of the subcutaneous tissue ; the alterations being more marked where there was much fat. In regions comparatively free from this subcutaneous layer, *e.g.*, the backs of hands and feet, sensation though blunted was better.

2. Over entire surface, deep pricking was necessary to cause pain.

3. Heat was either not appreciated or was mistaken for incision with a sharp knife. In the right leg above the ankle, cold was also described as "cutting." Generally cold was more readily perceived than heat.

4. The points of the æsthesiometer were not felt on light pressure, and on firm pressure were frequently mistaken for blunt objects such as the finger tips. Pressure by fingers or blunt instruments not felt except on firm application.

Electrical sensibility not tested ; there being no portable galvanic battery at hand.

The following measurements, while giving some idea of the excessive size of the woman, show a decided asymmetry in the development of the lateral halves of the body: (see cuts).

ARMS.

<i>Left</i>	{ Wrist,	6 $\frac{1}{2}$ in.	<i>Right</i>	{ Wrist.	7 $\frac{1}{4}$ in.
	{ Forearm,	10 $\frac{1}{2}$ in.		{ Forearm,	11 $\frac{1}{8}$ in.
	{ Arm (middle)	17 $\frac{1}{2}$ in.		{ Arm (middle)	17 $\frac{1}{4}$ in.
	{ Shoulder,	21 $\frac{3}{4}$ in.		{ Shoulder,	25 in.
Chest, 44 $\frac{1}{2}$ in.		Waist, 47 in.	Abdomen, 52 in.		

LOWER EXTREMITIES.

<i>Left</i>	{ Ankle,	8 in.	<i>Right</i>	{ Ankle,	9 $\frac{1}{4}$ in.
	{ Calf,	14 $\frac{1}{2}$ in.		{ Calf,	14 $\frac{1}{2}$ in.
	{ Over knee,	17 $\frac{3}{4}$ in.		{ Over knee,	19 $\frac{1}{2}$ in.
	{ Lower thigh,	19 $\frac{1}{4}$ in.		{ Lower thigh,	21 $\frac{1}{2}$ in.
	{ Upper thigh,	30 in.		{ Upper thigh,	27 in.

From these notes it is evident that the patient is congenitally neurotic.

Her father was a heavy drinker and her mother died of some affection of the brain. One brother is a heavy drinker and in childhood suffered from what, for want of a better

term, may be called *day terrors*. He has also a contracture of one of the ring fingers.



(From a Photograph.



From a Photograph.

Another brother is subject to severe headache, and lost a son from traumatic tetanus, while one of his daughters

has rheumatic arthritis of right hand. The patient herself is markedly neurotic, having had convulsions in childhood, and being excessively addicted to alcohol in adult life. Her menstruation began early (at eleven), was profuse, and ceased prematurely (at thirty-five). The contractures of the joints of the right hand, which are plainly visible in the photograph, are undoubtedly the result of rheumatoid arthritis.

The differential points of diagnosis between this case and one of simple obesity are decided. The enlargement of the body, now so general and so excessive as to prevent the patient from standing upright, began as a circumscribed growth about the knees, and was preceded by sensations of coldness and followed by pain in the same regions. The region of the right triceps brachialis was next the seat of the same overgrowth, and lastly the trunk enlarged. At this time the secretion of sweat was entirely suppressed, or at least could only be excited by the Turkish bath.

It must be acknowledged that the only characteristic myxœdematous features of the case are the enormous and perverted overgrowth of the subcutaneous tissues, and the more or less complete suppression of perspiration. The case is certainly not one of ordinary obesity, and if not one of ordinary obesity, then I am reporting a case of *paratrophy* which has not yet been classified and the parallel to which was recently published by Dr. F. X. Dercum.

With reference to the absence of cretinoid symptoms, it may be remarked that these are not always present and are known, in cases of *cachexia strumipriva*, to have remained absent for an indefinite period. In the tabulated report of the Clinical Society of London are 21 cases of myxœdema in which there was no imperfection of the mental processes, while in 66 nothing is said concerning them. In 21 there was more or less imperfection or dullness, and in 1 the answer was ambiguous. The whole number on which the report is based is 109. With very few exceptions, characteristic facial changes are noted. Among these exceptions are 4 cases by Ord. in which, strange to say, nothing is said about the face—a singular omission on the part of a

pioneer in the investigation of this disease. The inference is undoubtedly correct that no marked facial changes were present.

In almost every disease there are examples of the absence of characteristic symptoms. For example, in many epidemics of scarlatina, a sore throat may be the only morbid manifestation, while in those of cholera a diarrhœa, which presents nothing specific, so far as symptoms are concerned, may be unusually prevalent. We speak also of a variola sine variolis. The bronzed skin of Addison's disease may be absent, or of late appearance, and in cases of leucocythæmia the abnormal increase in the number of the white blood cells may be detected but a few days before death. To come much nearer our subject, it is well known that there is no regularity in the order with which the three cardinal symptoms of exophthalmic goitre make their appearance.

With reference to the eccentric situation of the first signs of "œdema" in this case, I would say that while they usually appear earliest in the face, there are numerous exceptions to this rule. For example, in 25 per cent. of the cases in the report of the Clinical Society of London, the "œdema" first appeared in parts of the body other than the face.

The most recent paper on the subject of myxœdema was read by Ord at the recent International Medical Congress, at Berlin,¹ and is now referred to, not only on account of its general interest, but because it has a marked bearing on the anomalous and incomplete forms of the disease. Ord declares that, contrary to the opinion of Sir William Gull, who believed the disease to be limited to the female sex, about 10 per cent. of the cases occur in males. He calls attention to the fact that the symptoms are not only subject to decided variations in different cases but also vary from time to time in the same case. This applies especially to the size of the body, the swelling of the skin, the speech, and the nervous system. Patients who have presented

¹ Wiener Med. Wochenschr., No. 41, 1890.

the typical signs of myxœdema may lose them all before their death, but Ord does not state whether or not such cases are to be regarded as cures. In typical cases there is a hypertrophy with nuclear increase, not only of the subcutaneous but of all the connective tissues of the body. Ord states that he called the disease myxœdema for two reasons: 1. On the clinical ground that the swollen tissues are elastic and do not put on pressure. 2. Because, in the first case (his own) in which the tissues were examined microscopically, an increased percentage of mucin was found. His examination was made during the height of the disease. The failure to find an increased percentage of mucin may be due to the stage of the disease in which the examination is made.

All the facts, says Ord, lead to the conclusion that myxœdema, cachexia strumipriva, sporadic and endemic cretinism, and the operative myxœdema of animals are to be referred to a common source: the loss of the function of the thyroid gland.

A CASE OF LANDRY'S PARALYSIS, WITH AUTOPSY.

A case of Landry's paralysis was the subject of a paper presented by Kirilzew and Mamurowsky at the "Jubilee" of Prof. Koshewnikow. It is reported in the *Centralbl. für Nervenheil. und Psych.*, Nov. 1890. The patient was a locksmith, who, after an illness of twelve days, died with the well-known symptoms of Landry's paralysis. A careful microscopical examination of the peripheral and central nervous system was made with the following results: A well-marked, acute primary parenchymatous neuritis, affecting especially the nerves of the feet, legs and forearms, to a slight extent the roots of the cervical and lumbar enlargements of the spinal cord. The cord itself showed hyperæmia of the gray substance, cloudiness and slight atrophy of the anterior ganglion cells and an accumulation of cortical cells in and about the central canal. The changes were by far the most marked in the peripheral parts of the nervous system, and the writers are convinced that Landry's paralysis is in almost all cases a variety of acute multiple neuritis.

J. W. B.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

<i>From the Swedish, Danish, Norwegian and Finnish:</i>	<i>From the Italian and Spanish:</i>
FREDERICK PETERSON, M.D., New York.	WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.
<i>From the German:</i>	<i>From the Italian and French:</i>
WILLIAM M. LESZYNSKY, M.D., New York.	E. P. HURD, M.D., Newburyport, Mass.
BELLE MACDONALD, M.D., New York.	<i>From the German, Italian, French and Russian:</i>
<i>From the French:</i>	F. H. PRITCHARD, M.D.
L. FISKE BRYSON, M.D., New York.	ALBERT PICK, M.D., Paris, France.
G. M. HAMMOND, M.D., New York.	<i>From the English and American:</i>
<i>From the French, German and Italian:</i>	A. FREEMAN, M.D., New York.
JOHN WINTERS BRANNAN, M.D., New York.	<i>From the French and German:</i>
	W. F. ROBINSON, M.D., Albany.

PATHOLOGICAL.

EXPERIMENTS ON THE THERMIC CENTRES.

In a very careful system of experiments made by Dr. Bartholomeo Baculo, in the Institute of General Pathology, University of Naples, on thermic centres, the author makes the following deductions:

1. Injury to the posterior or middle third of the optic thalamus produces general elevation of temperature, more especially in the half corresponding to the side of the lesion, and particularly of the superior parts.

2. Injury to the nates, corpora quadrigemina, produces general elevation of temperature, more especially in the half corresponding to the side of the lesion, and particularly of the inferior parts.

3. Injections into the lateral ventricles produce general lowering of the temperature.

4. Puncture of the cortical centres, practised without trephining and without injuring the ganglia at the base of the brain, produced lowering of the temperature lasting several days.

W. C. K.

PROGRESSIVE CHRONIC CHOREA.

In "La Psichiatria" (Anno VIII., Fasc. 1 e 2) Drs. Giuseppe Cirincione and Girolamo Mirto (Neuropathological Clinic, University of Naples) publish their conclusions on progressive chronic chorea and Huntington's chorea.

All the forms of chorea so far described—chorea of children, of adults, of the gravid, of the aged, hereditary chorea, etc.—may be placed in one morbid class characterized essentially by irregular and contradictory movements of variable intensity and extent.

Chorea is a unit; but from a clinical point of view it is convenient to describe two forms, having as a base not the age or other etiological data, but the favorable or unfavorable termination of the malady.

The first form constitutes chorea vulgaris, or of Sydenham. It occurs principally in children, less frequently in the adolescent, in adults, in the gravid, etc. and always terminates in recovery.

The second form constitutes the chronic progressive chorea, and may begin at any age, but is met with in greatest frequency in adults and in the aged. It is characterized:

1. By the slow chronic and progressive march of the choreic movements and by their weakness in voluntary acts.
2. By disturbances of speech.
3. By psychical disturbances (loss of memory, maniacal attacks, dementia).
4. By the fatal termination.

This last form may be designated as hereditary chorea, or of Huntington.

W. C. K.

DISTURBANCES OF SENSATION IN LESIONS OF THE BRAIN.

L. Darkschewitsch (*ibid*) makes an interesting contribution to the study of this question. He observes that it is a well-established fact that the sensibility of the skin is always affected in lesions of the posterior end of the posterior limb of the internal capsule. But, on the other hand, we have very few reliable observations to guide us in tracing the further course of the sensory filaments from the internal capsule to the cortex cerebri. He, therefore, considers the following case to be of interest, in which a disturbance of sensation proved on autopsy to be dependent on a lesion of the centrum semiovale of the left hemisphere.

The patient, 34 years old, was admitted to the Moscow clinic because of extreme weakness of the right hand. Family history negative. No syphilis nor trauma. No history of vomiting or headache. Patient has never had pleurisy or pneumonia, but has had constant cough during the past year. Of late the cough has increased greatly and four days before admission to the clinic the weakness of the right arm was noticed.

Status præsens. Patient extremely weak, is able to walk or stand only with great effort. On examination, marked paresis of the right upper extremity, especially shown in the movements of wrist and fingers. Considerable rigidity of the muscles, but no wasting. Electrical reactions normal. No trophic disturbances. Increased tendon reflexes of triceps and flexors. No clonus.

On testing the sensibility, this was found to be much diminished, especially at the peripheral end of the extremity.

All other parts of the body were entirely normal, both as regards sensation and motion. Taste, smell, sight and hearing were normal.

The patient continued to cough and expectorated profusely, the sputa being of very strong odor. Physical signs showed consolidation and softening in the right lung.

On the 12th day after admission to hospital, the patient died of general exhaustion. Several days before death he had complained of severe headache.

The autopsy showed gangrene of the right lung, as well as general bronchitis and emphysema. The brain was examined with great care. One horizontal section was made before hardening, on a level with the second frontal convolution. In the middle of the cut surface of the upper segment of the left hemisphere was found a spot of softening, which fluctuated under the finger. No further sections were then made, but the brain was placed in bichromate of potash and then alcohol. After hardening, the two segments of the left hemisphere were placed together and a series of perpendicular sections was made, the first section through the fissure of Rolando, the others parallel to it. In the middle of the posterior central convolution was seen a cavity, which evidently corresponded to the softened spot felt with the finger on the horizontal section. The cavity lay just below the cortex in the white substance of the centrum semiovale. A little higher up in the same convolution was a grayish-colored mass, the size of a pea, which resembled a tubercle. Nothing abnormal was found in any other part of the brain. On microscopic examination, the above-mentioned grayish mass proved to be a tubercle, and Darkschewitsch believes that the cavity also represented a tubercle which had been absorbed.

All the nerves of the right upper extremity were normal, and no signs of disease were detected in the spinal cord, medulla, pons, crura, or internal capsule.

Darkschewitsch, therefore, feels justified in attributing not only the paresis, but also the anæsthesia of the right

arm to the lesion in the middle of the posterior central convolution.

J. W. B.

UPON THE ETIOLOGY OF BERI-BERI.

Drs. José Musso and Juan B. Morell, Bacteriological Laboratory, Univ. of Montevideo (*Anales del Circulo Medico Argentino*, Aug., 1890, p. 313). The insufficiency of practical bacteriological investigations upon the etiology of Beri-Beri induced the writers to make some practical studies upon this subject. The material for these investigations was furnished by a patient coming from Matto Grosso on his way to the hospital at Montevideo.

Previously disinfecting the skin with hot water, bichloride of mercury (one per cent.), alcohol and ether, a small piece of the skin from the anterior region of the leg was removed with a scalpel, thoroughly sterilized beforehand. With a sterilized platinum needle, the blood flowing from the wound was then placed in various tubes: four of salted serum, three of gelatine, two of simple broth and two of broth and glycerine. They were then placed in thermostats registering 37° C. and 20° C. respectively.

At the end of thirty-six hours a proliferation was observed in three tubes of serum, two of broth, and in one of broth and glycerine, or in six out of eleven tubes. Examining the tubes more carefully there was found to be present a special form of micro-organism in a pure state in all the tubes save one, where other common forms of bacilli were intermixed. The constancy of these microbes, developing under special conditions, led the writers to examine them more minutely.

Examined under the microscope, without staining, they presented a spherical or spheroidal form, united into groups of diplococci, or tetrococci, and were from 1.40 mm. to 2.90 mm. in diameter. Under better conditions these spheres were found to contain a microbe from 0.55 mm. to 1.11 mm. in diameter, enveloped in an unicellular capsule. Staining in Zihl's fluid and washing in alcohol gave unmistakable proof of a capsule, which remained uncolored, while the microbe accepted the stain.

On gelatine plates the colonies were in form of white drops of a yellowish tint, and some granules. The colonies on the Agar Agar plates were similar. The gelatine did not undergo liquefaction.

Inoculations practised upon rabbits produced a polyneuritis degenerativa. Cultures made from these rabbits gave positive results. The writers promise a histological study of these tissues in a future number.

W. C. K.

MUSCULAR ATROPHY SECONDARY TO JOINT DISEASE.

Report is made in the "Centralblatt f. klinische Medizin" of the experiments of Raymond made on dogs for the purpose of ascertaining the pathogenesis of muscular atrophy following traumatic arthritis. He had observed, after injuries to joints, that the limb on the side of the lesion frequently underwent various nervous disturbances, that the function became weak, with an increase in the skin and tendon reflexes, and fibrillary contractions of the muscles, faradic irritability, and finally an alteration in sensation, followed by atrophy in all the muscles of the injured side. From his various experiments the author was satisfied that the accession of the muscular atrophy secondary to the joint lesion was of reflex occurrence. Vulpian's theory was that the irritation of the ends of the articular nerves told back on the spinal centres and thence upon the centres of the origin of the muscular nerves. This would account for the rapid development of the atrophy, the absence of the reaction of degeneration, and the simple atrophy found in the muscles.

MM. S. Duplay and M. Cazin, "British Medical Journal," January 24, 1891, recount their experiments on dogs and rabbits. The inflammation in their cases was set up by injecting nitrate of silver or tincture of iodine into the joint, or by the actual cautery.

The muscles when weighed always showed a loss, in one or two instances as much as forty per cent., usually in proportion to the duration of life (four to fifty-one days). In one of the experiments the inflammation was set up by wrenching the joint, and the animal was allowed to live for a year. Histological examination in this case showed a simple atrophy in the muscles, with all the nerves healthy except the articular branches. Here there was a diminished number of nerve fibres, a few of which were degenerate, the axis cylinders having disappeared. The perineurium showed inflammatory change, but the endoneurium was unaffected. In another experiment, however, the muscular branches were also diseased. The roots of the nerves were healthy, and no change was found in the spinal cord. The microscopic examination revealed nothing abnormal except the lesion in the articular nerves. The predominance of the change in the extensor muscles may be explained by the relation of the articular nerves to the nerves supplying these muscles. This cannot be said to take place without the intervention of the cord, and, indeed, a connec-

tion between the centres of the articular and muscular nerves in the cord may be assumed. From the work of the various authors the following conclusions may be drawn: (1) the atrophy of the muscle fibres is a simple atrophy; and (2) this atrophy can only be explained by a simple reflex, set up by the irritation of the terminal filaments of the articular nerves. The pathogeny clearly pointed out by Vulpian has thus been minutely demonstrated by the facts of morbid anatomy.

An exhaustive account of the work of Duplay and Cazin is found in the "*Archives Générales de Médecine*," for January, 1891. B. M.

MECHANISM OF CHEYNE-STOKES' RESPIRATION.

The "*Archives de physiologie normale et pathologique*," January, 1891, contain Dr. Wertheimer's exposition of this subject, of which the following are his conclusions:

I. Among effects produced by exciting the central termination of the pneumogastric must be included the different forms of interrupted or periodic breathing and the phenomenon of Cheyne-Stokes' respiration.

II. The results obtained through experiment were almost entirely due to chemical agents. At the same time, in an animal drugged by chloral the nerve may be excited by an induced current of electricity of constant intensity, with the result of adding to the persistent inhibitory effect successive variations of activity in the respiratory centres.

III. The experiments show that Cheyne-Stokes' respiration may be due to an incomplete inhibition of respiratory centres. L. F. B.

THE PATHOLOGY OF NIGHT.

The "*Annales Médico-Psychologiques*" for November-December, 1890, contain Dr. Cullerre's notice of Charles Féré's recent contribution to this subject, in the form of a view of nocturnal paralysis, which Weir Mitchell, Ormerod, Sinkler, Saundby and others have already written about. The influence of night upon living beings—more easily recognized than explained—has received attention from numerous observers. Combustion is lessened during the hours of darkness, respiration is less frequent, the pulse is slower, and the quantity of exhaled carbonic acid diminished. Light gives to the powers of general nutrition greater activity, even among the blind; and colored light possesses stimulating properties that diminish along the

scale from red to violet. Darkness, on the contrary, blunts sensibility, retards muscular reaction and general nutrition. While its physiological influence is great, there are certain pathological conditions that night gives rise to or exaggerates. Neuralgia, chorea, epilepsy, pains of osteitis, attacks of gout and asthma, night terrors, delirium, hallucinations, and suicide of the insane are some of these conditions. In the sphere of sensory and motor functions, night evinces its most characteristic influence, such as hæmeralopia, incontinence of urine, and the tremor and impotence of the alcoholic on waking, together with various hysterical pareses that attack women at the menopause, and also, though less frequently, are manifested in men. On waking the whole body may be found affected with this nocturnal paresis, or one side only, the parts tingling and the seat of painful numbness. Possibly the hands alone may be swollen, cyanosed and cold. Usually the conditions are the product of night and neuropathic predispositions. Yet they sometimes appear during the day, after washing, scrubbing or sewing, and last for a time, giving way to friction over the affected parts. They develop in the same territory as paralyzes from exhaustion. But Dr. Féré, instead of considering them due to excessive fatigue, sensory excitation, vivid impressions, or an idea that may have the force of any one of these, thinks that nocturnal paralysis results from an insufficient physiological stimulus. It is a paralysis of irritation. This want of physiological stimulus is of frequent occurrence among neuropathics—the degenerates that Morel observed, for example. Their frigidity had no other cause than this. One of them his whole life long found the sexual act impossible except in the open air, or in a room heated almost beyond endurance. This might find its proper explanation in some elementary deficiency in the nerve cells, causing them to break down easily, and consequently to send out feeble impulses, conditions common to the neurasthenic state.

L. F. B.

ACROMEGALY.

The "*Revue générale de clinique et de thérapeutique*," October 22, 1890, has a review of this startling disease. Among subjective phenomena are frequent headaches, more or less sharp pain in the limbs, excessive hunger and thirst, weakness of eyesight almost amounting to blindness, diminution of sexual desire, amenorrhœa, and frequently an increasing depression of spirits. Cutaneous sensibility is

preserved. The condition is never congenital, and heredity in kind plays no part. The pituitary body is hypertrophied, and certain lesions thus find their cause in compression, notably those of the optic nerve, together with various auditory and olfactory disturbances. The microscope reveals only simple hypertrophy of the cell elements of the pituitary body. Treatment thus far is without avail.

L. F. B.

FUNCTIONAL DISORDERS OF THE HEART.

Sir Dyce Buckworth's recent address on this subject is published in the "British Medical Journal" of August 16, 1890. Arrhythmia—infrequency, intermittency, irregularity—tachycardia and inordinate vascular pulsation are the disturbances considered. Infrequency occurs in convalescence from acute disease. Increased arterial tension also produces it in less degree. It may be permanent after malarial poisoning. Jaundice causes it, and injuries to the head. Infrequency is met with in encephalitis, meningitis, cerebral abscess, and hæmorrhage; and when physical signs of cardiac disease are detectable, aortic stenosis or fatty condition of the walls may be indicated. There are no facts to justify anxiety or a grave prognosis in respect to longevity on account of infrequent pulse. Intermittency may be unimportant or of the gravest significance. For purposes of diagnosis or prognosis care must be taken to ascertain the degree of arterial tension present. High-tension pulse with intermittency is more serious than the reverse, the condition probably being significant of progressive damage to the valves and coats of the aorta. Intermission after sudden exertion is of graver import than constant intermission. Intermittent pulse usually means some bad habit, as overwork, the use of tobacco, the excessive use of tea or coffee; shock, grief, loss of sleep, anxiety, etc., are recognized causes. The gouty habit may induce intermittency, though it is more apt to bring about irregularity.

Irregularity of rhythm and inequality of tension constitute irregular cardiac action. The pulse is irregular in force and volume. Temporarily this may arise from dyspepsia, emotion, abuse of tea, coffee, etc. Prognosis depends on cardiac textural soundness. In the gouty, irregularity is sometimes very pronounced, persisting for years without the supervention of any detectable organic lesion save weakness. Attacks of overt gout—eczema, phlebitis—may occur from time to time. Transient palpitation is often due to

dyspepsia. It exists in connection with chronic rheumatic arthritis and floating kidney. The persistent form denotes profound nervous disorder. Recurrent palpitation in middle life, which may alternate with great infrequency—two hundred beats giving place to thirty-four in a few days—coming on without warning, tend toward a gradual failure of the heart. Inordinate vascular pulsation is found in the abdominal aorta in anæmia, after hæmorrhage due to gastric ulcer, in a tendency to oxaluria, and in hypochondriasis and hysteria. Gout is certainly a cause. Balfour teaches that the nervous origin of palpitation may be ascertained by making the patient exert himself. Extra exertion subdues the rapid action. Were organic lesion present, such as fatty change, the contrary effect would ensue.

L. F. B.

CLINICAL.

A CASE OF APOPLECTIFORM NEURITIS OF THE
BRACHIAL PLEXUS, WITH AUTOPSY.

In 1888 Dubois, of Berne, related a new symptom-complex, to which he gave the name "apoplectiform neuritis." Within the last year two other cases were published—one by Déjérine-Klumpke, in Paris, and another by Eichhorst, in Zürich. Quite recently Dubois published his second case.

The symptomatology is the same in all. An individual in apparent health is suddenly attacked by paralysis, accompanied by pain, in the upper extremity. Sensory as well as motor paralysis is complete. Muscular atrophy rapidly develops, and in most cases there exist all of the classic symptoms of electrical reaction of degeneration as one sees in cases of traumatic paralysis. After a long time improvement generally takes place under the influence of electrical treatment. Gradually sensation is restored, but the paralysis and atrophy continue for a longer time, especially in the muscles of the hand.

In the case reported by Déjérine-Klumpke (*La Semaine Médicale*, 1890, No. 31) the paralysis occurred suddenly, just as the patient attempted to write. It affected the right upper extremity and lasted twenty-two months. The paralysis remained complete for many months, involving not only motility, but also all forms of sensation. Atrophy appeared early, and was soon quite pronounced. When the

patient entered Déjérine's service, the paralysis was still considerable, and the muscular power, although partly restored, was still very much lowered.

The hand was cold and cyanotic and the fingers in part ankylosed, yet the sensibility had returned to normal. The faradic and galvanic irritability were much lowered, but there was no reaction of degeneration.

After eight months' sojourn in the hospital, he died of phthisis pulmonalis.

At the autopsy the brain and cord were found normal. In the sulcus axillaris, the cellular connective tissue was considerably thickened and of a dark-brown color. There was a dense mass of tough fibrous tissue, which completely enveloped the bundle of vessels and nerves in the axilla. Microscopically the thickened fibrous cellular connective tissue was permeated by a large quantity of hæmatoidin. At one place there was a small cyst about the size of a hazel-nut, which was also filled with hæmatoidin.

The peripheral nerves still showed pathological changes, and especially in the cutaneous nerves the number undergoing regeneration was very large. The cord, being carefully examined after hardening, was found absolutely normal throughout, and so were the anterior and posterior roots. The presence of a hemorrhage which compressed the nerves of the brachial plexus is evident in the present case, and explains the sudden appearance of the paralysis. It also establishes the existence of "apoplectiform neuritis," thus fully confirming the conclusions which Dubois has drawn from his observations.

W. M. L.

POST-HEMIPLEGIC ATHETOSIS.

In the "*Medicinisich-chirurgisches Centralblatt*" Dr. Mader details the history of a case of this disease, occurring in a woman thirty-three years of age, who in the early years of her life had suffered from encephalitis, followed by right hemiplegia. When the patient first came under observation she was in the last stage of pulmonary consumption. There was right facial and arm paresis, with flexion and ulnar abduction of the radio-carpal joint. There was also present varo-equinus dextra and halux-valgus dextra. There was spasmodic contractions of the right arm, the athetoid movements becoming most marked when dorsal flexion or adduction of the hand was attempted. This same condition obtained in the right leg when attempts were made to straighten the foot. Considerable formication and tremor was complained of over the entire

right half of the body. There was oscillating movements of the head toward the right. On the day before death took place a number of vesicles appeared on the phalanges of both hands. Autopsy revealed atrophy of the left hemisphere and thickening of the left frontal bone. The dura on the left side was thickened, and, on section, a quantity of serous fluid escaped. There was atrophy of the left corpus striatum, optic thalamus, lenticular nucleus, crus and pyramid. They were denser in structure than normal, and were covered with a yellowish-brown exudation. There was no abnormality of the blood-vessels at the base of the brain.

B. M.

THE NAILS IN PERIPHERAL NEURITIS.

Dr. Bielschowsky, in the "Neurologisches Centralblatt" for December, 1890, describes a case of trophic disturbance in the nails of a patient suffering with multiple neuritis. The changes consisted of small white spots in the finger nails, occurring in all simultaneously, and gradually extending in length and breadth until the streaks, which remained perfectly white, reached entirely across the nails. Although the neuritis was present in the lower limbs, the toe-nails were unaffected.

B. M.

BULBAR PARALYSIS.

In the "Deutsche medizinisch-Zeitung" is found the report of a case of bulbar paralysis by Remak, the history of which presents some unusual features as to the possible relation between an attack of suppurative otitis media and the subsequent development of the bulbar symptoms. In February, 1890, the patient, a girl aged twelve years, had an attack of influenza, which terminated in an acute suppurative affection of the middle ear. As soon as this was apparently well, *i. e.*, when the discharge had ceased, paresis of the left facial muscle was observed, with some convulsive movements of the muscles of the upper lip. The mother of the child said that at this time the face assumed a peculiar look, and the speech became more or less unintelligible; that during sleep the eyelids did not close, and that the child complained of pain in the back of the head. Shortly after this swallowing became difficult, with a general deterioration in the patient's condition. September 8, 1890, when the patient was first seen by the author, the case presented the typical symptoms of bulbar paralysis. The characteristic expression of the mouth, as if it were

frozen, was present, with spasmodic deglutition and unintelligible speech. Electrical tests showed no reaction of degeneration. The patient was at once put upon the iodides and galvanism, but the condition grew rapidly worse, deglutition and respiration becoming more and more difficult, with fearful attacks of dyspnœa, death finally taking place from apnœa on November 5th. Unfortunately an autopsy could not be obtained, but the author speculates as to the connection between the healing of the ear affection and the subsequent insidious development of the bulbar paralysis.

B. M.

AMYOTROPHIC LATERAL SCLEROSIS.

A note on a case of this disease, by Joffroy and Achard, appears in the January number of the "*Fortschritte der Medicin.*" The patient, a woman sixty-four years of age, was entered as a hospital case in April, 1888. For three years she had suffered from disturbances of speech. This was followed by paresis of the extremities of the left side. Two years and a half after the beginning of the disease walking was impossible and speech absolutely unintelligible; the lips were also involved, and mastication and deglutition were performed with great difficulty. There was marked atrophy of the muscles of the arms, with contractures of the left. Disturbance was less in the lower extremities. Reflexes were increased. Sensation was intact. There was also incontinence of urine. Post-mortem examination revealed sclerosis of the pyramidal tract in the cervical region, with disappearance and atrophy of the nuclei of the hypoglossus. The degeneration in the speech centre was limited to the lesion in the medulla. The peduncles of the cerebrum and the internal capsule were intact. Sections of the anterior central convolutions of both sides disclosed granular degeneration in the gray and white substance, the same condition also existing in the occipital lobes. The nerves of the lower extremities showed considerable degeneration, especially those of the tibialis anticus. Examination of the cord at the level of the origin of these nerves revealed the same degenerative changes. The lesion in the spinal cord had evidently occasioned the general disorder of nutrition, the *dystrophie spinale*.

B. M.

A COMPLICATED CASE OF NEURO-MUSCULAR DISEASE.

A peculiar case of amyotrophia is described by Dr. G. Kobler in the "*Medincinisch-chirurgische Rundschau*." The patient, a small boy, eight years old, had suffered during the first years of his life from an attack of acute poliomyelitis. His appearance at the time of the report showed paralysis, marked atrophy, with loss of electrical irritability in the deltoid, biceps, brachialis, pectoralis, trapezius, rhomboideus and latissimus dorsi of the right side. Further examination showed increase in the volume of the muscles of the right lower extremity, with no diminution in the strength. There was a history of pseudo-hypertrophy of the upper extremity as well as of the lower, which had persisted for three years, the only remains of which was the present existing hypertrophy of the right thigh. In summing up the successive symptomatic phenomena in the case the author concluded that (1) the case was one of old poliomyelitis; (2) that there was progressive atrophy of the muscles of the shoulder; (3) that there was a genuine primary myopathic hypertrophy of the muscles of the right thigh, and (4) that the spastic phenomena depended upon the spinal lesion. Kobler attempts to explain this complexity of symptoms by citing a single case, reported by another author, in support of his theory. This case was that of a young child in whom the poliomyelitis persisted for three years, and was followed by various nervous disturbances, particularly the development of atrophies. He was convinced that the disease was the outcome of a vulnerability of the entire muscular apparatus. B. M.

THE COMBINATION OF FUNCTIONAL NEUROSES WITH ORGANIC DISEASES OF THE NERVOUS SYSTEM.

H. Oppenheim recently read an interesting paper with the above title before the Berlin Society of Psychiatry and Nervous Diseases. The paper and discussion upon it appear in the *Neurol. Centralbl.*, Aug. 15, 1890.

The reader reported eleven cases in which there was a combination of hysteria with either multiple sclerosis, spinal gliosis, cerebral syphilis, or facial paralysis. In the first case there were the usual symptoms of multiple sclerosis, *i.e.*, septic paresis of the lower extremities, uncertain, heavy gait, partial optic atrophy, nystagmus, slowness of speech

and lessening of sensibility of the extremities. In addition to these symptoms, Oppenheim noticed in the patient, a female, a continual rhythmical tremor of the right upper extremity. This symptom could not be attributed to the multiple sclerosis and it was thought to be purely hysterical. As a matter of fact, the tremor ceased at once under the influence of hypnotic suggestion, nor did it afterward return, in spite of the steady progress of the organic disease. Oppenheim is not sure whether the disturbances of sensibility were due to the sclerosis or were of an hysterical nature.

In another case the origin of the functional neurosis through psychic infection was clearly evident. A fourteen year old girl, suffering from multiple sclerosis, was in the same ward with another girl, a case of tic convulsif. The latter was at times forced by her disease to make spasmodic shaking movements with the arms, and to stamp with the right foot. One day, on entering the ward, Oppenheim found the sclerosis patient apparently attacked with the same symptoms; she shook her arms continually and stamped with her right foot. These imitated symptoms rapidly disappeared under psychical treatment, though the multiple sclerosis naturally continued its course.

In two of Oppenheim's cases, hysteria appeared in connection with spinal gliosis. The first of these, a woman 39 years old, had suffered from the age of 12 with migraine. After reaching adult life she began to have cataleptic attacks, and later hysterical convulsions, accompanied with slight temporary paresis and disturbances of sensibility. About a year before admission to the hospital the patient noticed a gradually increasing weakness of the right leg and arm and an inability to judge of the temperature of water with the left hand. Oppenheim, on examination, found a paresis of the right arm, atrophic weakness of the interossei with marked diminution of electrical excitability and fingers contracted in flexed position. There was also spastic paresis of the legs, especially of the right. The left hand was covered with cicatrices caused by burns, showed marked anæsthesia and almost total loss of the temperature sense; the same was true of the left side of the trunk.

In addition there was right hemiatrophy of the tongue with diminished electrical reaction.

The second case was similar to the above, but both the neurosis and the spinal gliosis were apparently of traumatic origin.

In four cases hysteria was combined with symptoms of cerebral syphilis. Oppenheim does not give the details of the cases, but states that in one the diagnosis was confirmed by autopsy.

Oppenheim's paper concluded with the report of three cases in which he made the diagnosis of peripheral facial paralysis combined with hysterical hemianæsthesia. The combination is a rare one and might easily lead to errors in diagnosis. The first case was that of a shoemaker, 18 years old, who had suffered from headaches since childhood. His brother was an epileptic and others of the family were of neurotic temperament. The patient, after exposure to cold, was suddenly affected with paralysis of the left facial nerve. He complained also of pain in the left temple and said that he did not see properly with the left eye. These symptoms inclined Oppenheim to suspect an organic disease of the brain, especially when he found anæsthesia in the region supplied by the fifth nerve of the left side. Ophthalmoscopic examination, however, of the left eye, showed the fundus to be normal. There was, on the other hand, a marked concentric narrowing of the visual field for white and colors, to a slight degree also in the right eye. The sense of smell was normal on both sides and also the sensibility of the nasal mucous membrane. On application of the magnet followed by static electricity, the hemianæsthesia as well as all other symptoms disappeared. The field of vision also became normal and the paralyzed facial muscles gradually recovered their tone. The other two cases were similar to the above.

In the discussion following Oppenheim's paper, Remak, Mendel and Bernhardt said that they also had seen hysteria combined with multiple sclerosis, and also with pseudo-hypertrophic paralysis and toxic neuritis. They agreed with Oppenheim that in his cases the facial paralysis was the exciting cause of the hysterical hemianæsthesia.

PARALYSIS OF THE LARYNGEAL MUSCLES OCCURRING IN THE COURSE OF TABES.

R. Dreyfuss (*Virchow's Archiv*, Bd. cxx., p. 154) reports the results of his examination of the larynx in twenty-two patients affected with tabes. In two he found disturbances in the larynx, which could be considered in direct relation with the nervous condition. In both cases the vocal cords were not sufficiently separated during respiration, scarcely reaching the cadaveric position, and in the deepest inspira-

tion they showed a tendency to flap together. Neither patient complained of pain or discomfort in the larynx. In the affection mentioned he could not recognize any ataxia, as the action of only one muscle was in question. He was inclined to consider it as an incipient paralysis of the crico-arytenoideus-posticus. He looks upon the posticus paralysis as a true paralytic phenomenon, particularly in tabes. He explains the tendency to adduction of the vocal cords in deep inspiration as a "seeming disturbance of co-ordination" (Benedict), as in stronger innervation the antagonists are involved in the action. The remaining cases presented nothing abnormal, and in all the sensibility and motility of the pharynx was entirely undisturbed. He calls attention to the fact that transient deviation of the vocal cords in ab- and adduction occur also in health, particularly in unpractised persons. In one tabetic he found an overlapping of the arytenoid cartilage, which, to all appearances, arose from an abnormality of the crico-arytenoid articulation.

W. M. L.

THERAPEUTICAL.

NOTE ON HOW BEST TO USE SULFONAL.

Dr. J. Madison Taylor, Physician to Howard Hospital, Philadelphia, Department for Nervous Diseases; Assistant Physician to the Infirmary for Nervous Diseases, etc. (University Medical Magazine, May, 1890).

The search for that which shall safely and efficiently aid in securing our greatest restorative, sleep, has too often resulted in much exaggerated confidence in this or that medicine, not seldom followed by undeserved contempt.

All along the line of out-of-fashion hypnotics may be found many drugs which, if properly administered, or combined with others, will amply repay the searcher. Just now the sulfonal wave seems to be subsiding, and journals on all sides are questioning its value. Against this undue swinging back of the experimental pendulum I protest, and seek this occasion to put myself on record as believing sulfonal, when judiciously employed, to be possessed of rare and admirable qualities. It is not the least important in the art of medicine to learn how to get the best results of drugs administered. Success or failure depends far more on this than on the choice of physic. There are, indeed, many points in the use of internal remedies other than the mere swallowing thereof, but into the question of absorption, etc., it is unwise to enter here.

In a large experience, public and private, in the use of sleep persuaders, I have never known sulfonal to exhibit those treacherous qualities with which it is accredited. That it is at times ineffective is the part of all medicaments assuredly, but that it has toxic properties in suitable doses has not been shown to me in a pretty constant use of it for a year or more past. Nor has my experimentation been on "healthy individuals," but entirely confined to those whom I felt it might benefit. This it usually did, and not seldom when all else had failed. It is useless to give details of all cases wherein this drug was used by me, but they number not less than forty or fifty, and are worthy of attention because critically watched.

I see the doses quoted by most writers from twenty to seventy-five grains, given usually at bedtime. The effect was then either *nil*, moderately good, or entirely disastrous. Sometimes the digestion was seriously upset, the circulation depressed, restlessness, intense drying of the skin, or a most disagreeable stupefaction induced on the day or days following.

At the present time the cortical motor centres attract much attention, and if a sick man staggers a bit from weak knees, gastric vertigo or simple sleepiness, he is accused of having his motor centres directly poisoned. I have seen overdoses—not necessarily large ones—of sulfonal produce in one instance a slight staggering in gait, and if we must look directly to the brain for explanation, would respectfully suggest that the effect here was upon the higher cerebral centres, after the manner of the over-exhilaration of a rich-bodied wine. For at the same time there was a distinct *bienfaisance* there noticeable. Not that this is a common effect of the drug, but in the person referred to, and for whom it was much used, it frequently acted thus.

Many times I have needed to rearrange the time and size of the dose, often lessening it to advantage, to suit the kind of sleep needed. Some people in fair or in depressed health fall to sleep quite naturally at the proper time, and wake toward morning. In these it is desirable to give the remedy toward bedtime, to have its tardy effect when needed in the small hours. In some the day restlessness exhausts the power to slumber, and day doses are enough. Watchful heed is needed to find the effect desired, and a little care will suffice to meet the exigency.

Let us consider a reasonable rule to guide in the use of this drug. As a motor depressant it will be found of value to give small doses, of ten, or better, five or seven grains,

and after food, twice or thrice a day. As a hypnotic, the same dose, beginning in the early afternoon, at intervals of two hours, and continue until a couple of hours before the sleeping time: say, at 4, 6 and 8 o'clock P.M. If this be not effective, then begin at 2, or add a couple of grains to each powder; very rarely will four powders of ten grains each fail, and more rarely four of twelve and a half or fifteen grains.

In the wakefulness of typhoid fever, when ten grains do not suffice, three powders of five grains each sometimes will do. It seems best given in milk or a little soup. Its very slight solubility and almost tastelessness will permit of its being used in practically any vehicle, but best with or soon after food.

Of course there is far less trouble in swallowing a big dose down at once and having done with it. Moreover, if it be demonstrated in future that sulfonal should only be given as I advise, in oft-repeated smaller doses, and this be found annoying, there are, doubtless, many other drugs which may be selected.

My feeling is, however, that in sulfonal we have a weapon which very often is effective where others fail, and freer from objectionable properties than many. W. F. R.

THE ELECTRIC LIGHT AS A THERAPEUTIC AGENT.

Estanislao von Stein (*Ciencias Medicas*, Oct. 10, 1890, p. 584). The following case suggested to the writer the idea that the electric light might in many cases have a beneficial effect on certain neuroses. A woman of forty-five years complained of frequent and painful deglutition, some disturbance of taste, and of certain pains in the bones of the face, which on inclining grew more intense, especially over the forehead and in the orbits. At first the pains were so intense that the patient cried out repeatedly. Salicylate of soda, and Spanish blisters applied to her neck relieved her in great measure. On examining her I found some salivation, nausea on swallowing water, the mucous membrane of the inferior turbinated bone somewhat swollen. Crusts were present in the naso-pharyngeal cavity, with inflammation of the left side. Stridor and pain in the ears, the bones of the face painful to touch, and the movement of the head interfered with because of the sensitiveness of the sterno-cleido-mastoid muscle. Thanks to local treatment, the nasal respiration improved, also deglutition

and hearing. I imagined, on finding some diseased teeth, that there existed a suppurative inflammation of the superior maxillary bone, and that these disturbances were of reflex nature. I illuminated the mouth with an electric lamp, but found nothing. The next day the patient reported her ability to swallow water without difficulty, the return of taste, and absence of the constricted feeling in the throat. I afterwards directed the electrical lamp for some seconds to the bones of the left side of the face, and after a short time the sensitiveness disappeared. The right side, however, remained painful; but on applying the light it also was relieved. In like manner the patient was relieved of all her troubles, and all in the short space of one week.

Having thus noted the calming effect of the electric light, the writer experimented upon others, to see if his observation was only causal, depending upon the individuality of the patient. Without prejudging its therapeutical importance, the author gives the following clinical histories:

I.—A cook, 50 years old, was afflicted twice yearly with severe lumbago, lasting two to three weeks. This time the pains were so intense that she could only raise her limbs with aid of her hands. I illuminated the lumbar region for five minutes, giving the woman much relief, enabling her to raise her limbs without aid and to rise from her bed. On the evening of the same day I again illuminated the sacro-lumbar region, and on the following day the woman could walk freely without any sign of pain.

II.—A woman of 30 years complained of painful points over the spine and acromial process. After two illuminations, lasting four to five minutes, the pains disappeared, and the movements became normal.

III.—A woman 39 years old, after exposure to cold, had suffered pains for more than five years in the shoulder joints, elbows, and sometimes in the trapezius muscles. After two illuminations the pains completely disappeared.

IV.—An institutrice consulted me for the first time, in 1884, for an intense buzzing in the ears and a constant pain in the forehead and back of head. The examination showed a rhinitis hyperplastica, a slight opacity of the tympanum, and depression. The nasal lesion yielded to local treatment, but there still remained some buzzing and intense pains in the head. After several illuminations these pains disappeared.

V.—A woman of 50 years, neurotic, has been troubled for a week with pains in the right fibio-tarsal articulation, compelling her to walk with a cane. Compression over this articulation produces great pain. After an illumination lasting five minutes, the pain subsided in great part; and she could move about without the aid of a cane. After the second illumination all pain disappeared.

VI.—A prompter in the theatre, 72 years old, afflicted with tubercular laryngitis, is unable to rest either by day or night on account of a severe cough. Six centigrammes of morphia daily relieve him slightly of these attacks. Illuminating the pharynx externally and internally for twelve to fifteen seconds produced marked relief.

The following cases were placed at my disposal by Sr. P. M. Nechaief:

VII.—Laborer; has been afflicted with rheumatism, with pain in the shoulder and trapezius muscles, rendering movements of the arm nigh impossible. After the first illumination all pains passed away, and normal motion returned.

VIII.—Farmer; neurasthenic; has suffered with a severe attack of intercostal neuralgia which resisted all modes of treatment. After the first illumination, repeated at short intervals for a few seconds, the neuralgia disappeared and has not troubled him since.

IX.—Farmer; slight pressure upon the integument of the abdomen produces intense pain, in consequence of which he walked about with much difficulty. Injections of morphia produced little relief. Illuminating the abdomen for several minutes the pains receded, so that it was possible to palpate the abdomen. The patient could now walk without difficulty. On the following day some pain was present, which was due to an acute prostatitis.

X.—In a case of lumbago, one illumination sufficed to dispel all pain.

XI.—Farmer; synovitis of the left knee joint. The articulation is swollen and painful. After illumination for several minutes the patient could walk with more ease, although twenty-four hours later the pains reappeared. He was placed under surgical treatment.

XII.—Three cases of sciatica. Pressure over the nerve produces severe pain; but after an illumination of five minutes the pains eased up considerably, so that pressure

could be well tolerated. One of them who could only walk with aid of a cane now walks well without it. Another had resorted to large doses of morphia in order to obtain relief. All considered themselves cured. W. C. K.

NOTES UPON SOMNAL, THE NEW HYPNOTIC.

In the "Western Medical Reporter" Dr. Frank Woodbury states that somnal acts as a hypnotic, but instead of depressing the system, as chloral does, it slightly stimulates the gastric mucous membrane, relieves nausea and pain, improves the appetite, increases secretion (probably) and does not cause constipation. The circulation, respiration and temperature are not notably depressed after its administration. No disagreeable after-effects have been observed. A. F.

VALERIANIC ETHER: ITS ADVANTAGES AND PRACTICAL ADMINISTRATION AS AN ANTI-SPASMODIC IN NERVOUS TROUBLES.

BY F. S. MASON.

Valerianic ether, discovered by Otto, was first applied as a therapeutic agent by the distinguished chemist Vial.

Pure valerianic ether is less volatile than ordinary ether, and has the appearance of a heavy colorless oil. Its density is 0.894 at 13° C.; the odor is penetrating, and the taste recalls somewhat that of the melon.

In this concentrated form, however, it is unfit for internal use, and on this account its strength is best attenuated by the addition of sulphuric ether, which gives a better preparation of medicinal valerianic ether (Vial), perfectly safe and reliable for internal administration.

As a prompt anti-spasmodic this preparation is dispensed in the form of a small spherical capsule, containing fifteen centigrammes (about four drops), easy to swallow and well adapted for preserving its full activity.

The valerianic ether contained in these capsules is less volatile than ordinary ether, its effects are more energetic and permanent, while it is certain in its action and more convenient to administer than valerian.

The following quotation from the "*Tribune Médicale*" indicates the cases in which its administration is most generally indicated:

"First used in epileptic hysteria with good results, it was shown that it might be applied equally well in simple cases of hysteria.

"Before and during the functional excitement of menstruation, characterized by weak pulse, giddiness, vapors, spasms, muscular trembling and nervous irritability, it renders considerable service.

"It may be safely recommended to ladies susceptible to such accidents and in those general cases of nervous excitability characterized by neuralgia, nervous headaches or megrim, cramps of the stomach, digestive troubles, nervous retching and vomiting."

Dr. Walling, of Philadelphia, recommends it in nervous troubles, and mentions the case of a young girl who had hitherto only been relieved by hypodermic injections of morphia for "*dysmenorrhœa*," or more properly "*menorrr-spasm*." He says:

"Two pearls, given about fifteen minutes apart, gave complete relief in twenty minutes.

"The patient slept well that night with the use of one additional pearl, and is loud in praise of the remedy. I have also used the drug in a case of nervous diarrhœa; it relieved the pain and gave refreshing sleep, with marked amelioration of the bowel trouble."

In Dr. E. Frost Newton's recent brochure on *menorrr-spasm* and *dysmenorrhœa* she says that in cases of hysteria (or *hysteralgia*) four to six capsules daily, just before the attack, mitigate or prevent the liability to come on.

Dr. Benedict (Buffalo), speaking of his experience, says that in the case of an old woman suffering with *gastralgia* it afforded relief, and in a neuralgic young woman it gave equally good results, and that as an anodyne after injury it acted efficaciously.

In conclusion, clinical evidence is largely in favor of more extended use of the preparation. The dose varies, according to the intensity of the case, from four to six capsules daily.

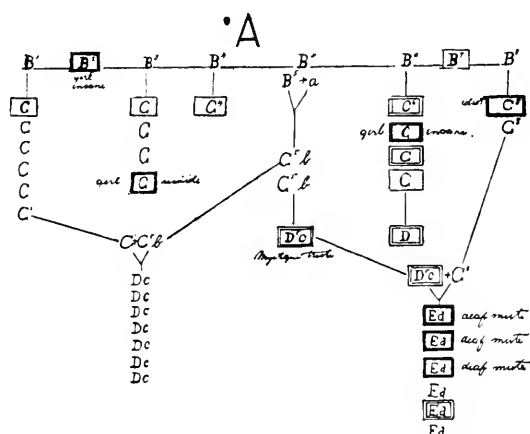
One or two capsules should be taken at a time in a spoonful of water a little before the attacks, if they occur at repeated intervals.

In prescribing, write: "*Vial's valerianic ether capsules*."

PSYCHOLOGICAL.

A DEGENERATED FAMILY.

Dr. Albert Mathieu, in the "Gazette des Hôpitaux," gives us a remarkable family history, arranged in tabular form, and showing in a striking manner how insanity, or the wider term degeneration, runs in families and is inherited from father to son. The annexed table speaks for



itself, and a few words of explanation will suffice to make it perfectly clear.

A is the father of the whole family, an upright but very eccentric peasant.

The eight B 's are his eight children.

Individuals who are perfectly normal as B^1 are represented by the letter simply.

Eccentric members of the family have a single line around them; great eccentricity is marked by a double line; while severe mental degeneration is indicated by a very heavy black line, as in the case of the second girl, who was insane, and the daughter of the third child, who committed suicide. It is hardly necessary to say that the *C*'s are children of the *B*'s, and are therefore all cousins-german.

The fifth child, B^5 , married a young girl (a) whose two brothers were insane, and the results of this most ill-assorted marriage between persons bearing each a mental taint are very interesting to observe.

There were two children, one of whom married his cousin-german, as shown by the table. They had in all seven children, who were considered the brightest and cleverest children in the village. It should be mentioned here that the children of any marriage are represented by two letters and the marriages themselves by a cross; thus $B^5 + a$ indicates the marriage of the fifth son of A with the young girl, a , and their children are represented by $C^5 b$.

The second of these children, $C^5 b$, had a daughter, a sort of religious melancholic, who was never seen to smile. She married the cousin-german of her mother, whose brother was an idiot, $D^5 c + C^5$. The results of this union were particularly deplorable. Out of five children, three were deaf and dumb, and that spontaneously without any known cause. Another of these children is excessively peculiar.

To sum up: out of the 43 persons in this table, there are 5 peculiar, 5 very peculiar, 2 lunatics, 1 idiot, 3 deaf-mutes and 1 suicide, in all 17 persons more or less degenerated.

It is to be remarked that not a single disease of the spinal cord is to be noted in this family. It is true that they were all peasants, who lived the healthy open-air life of the fields. The peasants' work is severe and requires a great expenditure of force; but, on the other hand, they hardly ever overdo except during the harvest. In the city the spinal cord would hardly have been so completely spared, since overstrain of various kinds is so much more frequent there.

Syphilis and alcoholism played no part in these nervous manifestations. In the whole family there was but one drunkard, and he was undoubtedly a dipsomaniac before becoming an alcoholic.

If all this had occurred in the city, instead of in the country, there is no doubt that the pathological picture would have been much more complicated. Dr. Mathieu considers this history of special interest, therefore, as showing the action of the mental taint as free as possible from outside influences.

W. F. R.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of January 6, 1891.

The President, Dr. LANDON CARTER GRAY, in the chair.

THERAPEUTIC EXPERIMENTS WITH NITROGEN' MONOXIDE.

Dr. W. R. BIRDSALL related the results of a number of experiments made with this gas for the purpose of testing its therapeutic value. The speaker had thought it advisable to begin his investigations on the class of cases in which the symptoms, such as pain, spasm and some morbid mental states, called for immediate relief rather than to watch its effects upon the general course of a chronic disease. In all of the sixteen cases where the gas was administered for the relief of certain symptoms, the action as a therapeutic agent had proved valueless. The chief cause of the failure, in the speaker's opinion, was the transient effect of the gas due to its rapid elimination. The extensive series of experiments published by the Odontological Society of Great Britain showed that the average time required for the production of anæsthesia was only eighty-one seconds, and the time from the beginning of anæsthesia to recovery of consciousness but one hundred and fifteen. The various theories of the physiological action of nitrogen monoxide gas were reviewed by the speaker, who then concluded from deductions from other observers' work and his own experiments that this gas seemed to be an agent which during its inhalation interfered, by displacement, with the normal supply of oxygen to the tissues. And as the cortical functions were the most readily disturbed by imperfect oxygenation, the most striking effect was shown in the marked cerebral disturbance following its administration; that the rapid elimination prevented prolonged effects after the supply was cut off, and that the first effect of the gas was on the higher cerebral functions. The long-continued and repeated inhalations of the gas could only be of service when it was decided to deprive the system of

oxygen. The inhalation of a gas that produced marked sensations which were sometimes of a startling character might prove a powerful agent for suggestion, particularly when coupled with verbal suggestion by the physician. In fact, the speaker was inclined to attribute the beneficial effects obtained with hypochondriacal and hysterical patients to this element in the nitrogen monoxide gas. Finally, his view, based on physiological and clinical observations, was that the uses of nitrogen monoxide for medical and surgical purposes were restricted to its effects as an anæsthetic or as a placebo.

Dr. R. L. PARSONS said that his experiments with the gas had not given very satisfactory results. He had administered it in a case of melancholia with insomnia. It had produced a feeling of comfort and well being during the time of inhalation, but the effects were very transient. In another case of opium habit and alcoholism, in which there existed intense muscular pain and insomnia on withdrawal of the opium, he had given the gas in the hope that it would compensate for the drug. During the administration the patient was fairly well pleased, but had become dissatisfied because the results were not permanent, and were sometimes disagreeable.

Dr. W. M. LESZYNSKY said he had taken the opportunity to test this gas in asylum practice for cases of melancholia of mild type, but without any beneficial results. The gas required to be rapidly increased. He hardly thought the cylinder exhibited by the reader of the paper would hold gas enough to do much good.

Dr. W. J. MORTON, Dr. C. L. DANA and others spoke to the question, the general opinion seeming to be that nitrogen monoxide was not likely to rank very high as a therapeutic agent.

A STUDY OF THE RELATION OF INTERCURRENT ACUTE DISEASES AND SERIOUS INJURIES TO RECOVERY IN TWO THOUSAND CASES OF INSANITY.

Dr. W. D. GRANGER read a paper with this title. He thought that the close attention paid to all of the details relating to the life and surrounding comforts of the insane had much to do in reducing to a minimum the intercurrent of acute diseases in this class of patients. In two thousand cases, extending over an observation period of eight years, the author had never seen acute articular rheumatism, but

three cases of pneumonia, three of typhoid fever and one of diphtheria. Sore throat was abundant, as it was usual in all aggregations of people. Erysipelas appeared from time to time. Epidemics were likely to appear. In spite of a common idea, and the reports of other observers, there was little to be told about the influence of disease on insanity. The simplest common affection from which they suffered was pain, often sudden and severe. Toothache was often added, followed by alveolar abscess. It seldom produced fever. He had never seen more than temporary improvement from pain, though he believed severe toothache might produce recovery. Pain might increase all the mental symptoms, making mania more active, melancholia deeper, and even dementia more pronounced. Often it had no effect whatever, and often the severest pain seemed to be borne with indifference. Sometimes active mania was quieted and a rational and self-controlled condition approached. Melancholic patients of a decided type most often bore pain uncomplainingly, but sometimes showed marked mental improvement. In some sore throats, especially the ulcerative varieties, mental improvement of a temporary nature was always expected. The conditions were like those observed in pain, though, as a rule, more pronounced. In some chronic cases of mania, with confusion and incoherence, the patients talked rationally, while the violent were quieted and often rational. Melancholia was less affected. Dementia was almost always brightened. The expression changed, the mind was more active, the symptoms of venous congestion might partly disappear. In the cases of pneumonia observed, mental improvement occurred in one case only, but in that the change was remarkable; as soon as the disease waned, the patient relapsed into his demented state. In pneumonia the improvement was only temporary. Out of seventy-seven cases of dysentery only four could have been said to have improved mentally. The author thought that his observations should teach how little truth there was as to the beneficial influence of intercurrent diseases and their effect upon insanity. Considering severe injuries upon insanity, there was much more to be said in favor of the theory. The histories of six cases, in which the patients had jumped from heights of from twenty-five to forty feet from the ground, some sustaining injuries and others not, but with marked improvement in all, were fully detailed. To attempt to explain the reason for improvement or recovery, after either disease or injury, would be, the speaker said, to

involve oneself in an almost hopeless problem, unless further research revealed more definite data upon which to work.

Dr. PARSONS said that he had seen a few cases of intercurrent disease in which the patients previously insane had become entirely rational; but his experience was the same as that of Dr. Granger, that these results were not permanent. There was no doubt that in some cases of insanity, associated with epilepsy, surgical interference or other traumatisms, would retard the explosions for some time. He had seen one case in which counter-irritation by means of a seton was kept up for some years without any recurrence of the fits; upon the healing of the outlet an attack of acute mania had supervened.

Dr. E. D. FISHER thought that the idea propounded by Dr. Granger was the correct one. If it were a fact that there was no pathological lesion in mental disease, it could hardly be urged that intercurrent maladies could have any curative effects. But in the functional forms he could understand how an acute lesion, either from an injury or discharging sore, might have an effect by directing illusions or hallucinations into other channels. But in chronic disease, such as general paresis or mania, or other mental disease with a known pathology, he did not believe the intercurrent disease would have any lasting effect.

A CONTRIBUTION TO THE DIAGNOSIS OF RAYNAUD'S DISEASE.

Dr. G. W. JACOBY read a paper on this subject. Although a great deal had been written upon the subject of local asphyxia and symmetrical gangrene, since Raynaud first drew attention to this disease, and very many new cases of the affection had been described, the knowledge at the present time of all of its features, except perhaps the purely clinical ones, was hardly any more advanced than it was at the time of Raynaud's writing. Etiologically we had, in a certain sense, made some progress, for now we realized that other causes than those which Raynaud believed to be the only admissible ones might have a supplementary productive action. As it was recognized that the symptoms of local asphyxia and symmetrical gangrene were often due to unrecognizable states of disordered blood mixture, the author simply touched upon this point. He said that upon the question of anatomical nerve disease as a cause of symmetrical gangrene there could not be any uncertainty

That the nerves did exert a certain amount of influence upon the production of gangrene, either indirectly, by effecting a contraction of the vessels and thus suppressing the nutrition of the part (Raynaud), or by producing it independently of the vascular system, could not be denied. According to the assertions of Quesnay, section of the nerves was said to produce gangrene of those parts in which they took their course. This assertion had been made repeatedly since then, but the proofs were wanting on account of the impossibility of completely cutting through all the nerves of a part and leaving the arteries uninjured. On the other hand, a clinical proof of this dependence was found in the fact that gangrene of an extremity occurred after ligature of an artery more easily if the nerve had been injured than if this was not the case. As stated, in order to make a diagnosis of symmetrical gangrene in Raynaud's sense, we must be able to exclude gross nerve disease. This could not be done in many cases. The class of cases which the speaker dealt with were those cases which came under the caption of gangrene due to pathological changes in the blood-vessels. It was *sine qua non* for the diagnosis of Raynaud's disease that the lumen of the vessels should be free and that their walls be found in a healthy condition, so that vascular disease might anatomically be excluded as a causal agency in the production of this affection. If, with this in mind, we reviewed the various cases reported, we would find that although pathological examinations had not been frequently made, still in a number of cases in which this had been done, the condition of the arteries did not fulfill the required obligations. All cases of spontaneous gangrene, symmetrical or unilateral, would require careful attention and examination. In many cases we would be able to discover some local change in the arteries of the affected parts, while in others some general affection of the arterial system would explain the gangrene. Many cases would, however, always remain, no matter how careful the examination, in which no such explanatory conditions could be detected. There were, however, still other cases, which in view of the fact that many of the so-called cases of Raynaud's disease were not symmetrical, and might be ascribed to nerve influence, which were better explained by the assumption of an obliterative endarteritis. It was well known that syphilis produced upon the arteries a periarteritis which gradually encroached upon their entire diameter, finishing as an endarteritis and thus narrowing or even totally obliterating the calibre of the vessel. It was also

well known that many cases of spontaneous gangrene resembling Raynaud's disease in every particular were often due to such affection of the arteries. What was known about the symptomatology of syphilitic affections of the superficial arteries, as revealed by a study of the few published cases, was as follows: Two phases of the pathological changes found a clinical expression and obliged us to differentiate a stage of induration, with preservation of the lumen of the artery, and one of obliteration of the artery with all its consequences. In the obliterative stage we had symptoms of ischæmic progressing in extent according to the seat of the affected arteries and according to the difficulty encountered in the establishment of the collateral circulation; if the terminal arteries of the extremities were affected, the disorders would be very marked, consisting in œdema, slight cyanosis, reduction of temperature, and finally we might also have gangrene of the parts. If, however, small arteries were affected whose collateral ramifications could be replaced, then the symptoms would be transient or entirely wanting. From a consideration of the various data, from the nephritic as well as from the syphilitic cases, we were unavoidably forced to the conclusion that those authors who admitted that an affection of the small arteries, be this arteritis obliterans or other change, did produce a similar clinical picture to that found in Raynaud's disease herein were right, but that these same authors were wrong when they contended that a differential diagnosis between the two affections could always be made. The points which were adduced by the various writers for the purpose of making this differential diagnosis were the following: Gangrene occurred in some cases of Raynaud's disease in places where endarteritis obliterans had thus far never been described. The lesion in many cases of Raynaud's disease was confined to the superficial layers of the cutis, and this never occurred in endarteritis obliterans; the absence of those etiological moments which produced vascular disease, as syphilis, absence of all palpable anatomical changes in the vessels, and, finally, the occurrence of symmetrical gangrene in neuropathic individuals only. That these points were invalid and some of them erroneous became clear when we considered that it was probable that arteritis obliterans occurred in the vessels of the skin—a condition which had been pointed out by Klotz and Hutchinson. From these facts we were justified in concluding that the differential diagnosis between Raynaud's disease and anatomical disease of the arteries could

in many cases not be made intravital; or, in other words, many of so-called Raynaud's disease were really cases of arteritis.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, December 22, 1890.

The President, Dr. H. C. WOOD, in the chair.

Paper of Dr. Henry. See page 154.

DISCUSSION.

Dr. FRANCIS X. DERCUM.—I am glad to hear the report of a case similar to the one which I reported some time ago in the "University Medical Magazine." I believe that there are a number of these cases which are mistaken for ordinary obesity. These cases, however, present certain distinctive features which to my mind fix their myxœdematous character, although they differ from typical myxœdema. They differ, in the first place, in not involving the true skin. Myxœdema proper involves the true skin primarily. This becomes excessively thickened, and there is not only a deposit of mucin, but the connective tissue becomes embryonal in type, and the fat also assumes an embryonal character. They differ, in the second place, in the fact that changes about the face are not marked. The changes appear in the arms and the legs. In my own case, the changes were first noticed in the arms, and subsequently made their appearance in the knee of one side. There were these local indurations of these presumably fatty masses, and over these swellings there was marked diminution of sensation. In some there was absolute want of sensation. In my case there was also dull pain at various points, but at certain times the pains become very acute. These attacks of acute pain are accompanied with decided increase in the induration of these masses, which have a lobulated or worm-like feel beneath the skin. I think the same is noted in Dr. Henry's case.

My patient also had a history of dryness of the skin which was persistent. She did not sweat, even when pilocarpin was given.

There was no local deformity, fixation of joints or contractures in the case which I reported. There was at one time pain in both hands on movement, especially the right.

In addition the patient presents to this day frequently recurring hæmorrhages from the mucous surfaces, just as do true myxœdematous patients. There has been hæmorrhage from the nose, from the mouth and from the throat. There have been repeated attacks of hæmatemesis. She has coughed up blood, and she has had bloody movements. She has long since passed the menopause, and there has been no hæmorrhage from the uterus as in the case reported by Dr. Henry.

In regard to the mental condition of the patient I may say that at one time she was intensely irritable and also decidedly sluggish. At one time there was decided slowness of speech.

Two symptoms my patient had which Dr. Henry did not mention. She had the same marked supra-clavicular swellings that are found in cretinism and in myxœdema.

Secondly, in my case, no trace of a thyroid can be felt. Of what value this symptom is it is difficult to say. The thyroid is difficult to feel in any subject; but if there is not too much subcutaneous fat, the gland can usually be felt. In my case the trachea can be distinctly felt.

In making the microscopical examinations in these cases we should be exceedingly careful. The sections should be very thin. My own sections were not over the one-two hundredth of an inch in thickness. I got appearances not only of vessels, but also of nerves and of the cells themselves. The connective tissue cells were large embryonal cells, fusiform in shape, with large nuclei. The fat cells also were fusiform, and contained fat in comparatively small amount. The nerve fibres showed marked infiltration of the nerve sheaths with nuclei. What the significance of this is I cannot say. It certainly is pathological.

One thing that was neglected in my case was the examination of the juice that escaped from the punctures made in these masses. A clear lymph-like fluid escaped, which could be collected in small quantity.

Dr. CHARLES K. MILLS exhibited photographs of cases of organic nervous disease, including two cases of myotonic and athetoid disease.

Adjourned.

NEW YORK ACADEMY OF MEDICINE.

Meeting of December 18, 1890.

The President, Dr. A. L. LOOMIS, in the chair.

The proceedings at the last stated meeting of the Academy of Medicine comprised the consideration of certain lesions of the visual tract from the eyeball to the cerebral cortex. In this relation Dr. C. S. BULL read a paper on

PAPILLITIS.

After going over the regional anatomy of the retina, giving a terse clinical history of papillitis and of the pathological changes connected therewith, Dr. Bull expressed the opinion that the most common cause of papillitis was intracranial disease, and that of the intracranial lesions tumor was the most frequent. The frequency and severity of the papillitis did not seem to be materially influenced by either the nature, the size or the location of the tumor.

The next most frequent cause was meningitis, then followed abscess of the brain, hydatid disease and softening from thrombosis or embolism. Papillitis was also occasionally met with in acute diseases of the spinal cord. The author then gave a synopsis of the various views as to causation which have been from time to time held and promulgated by distinguished authorities. In summarizing his own consideration of the subject, the speaker said that optic neuritis, limited to or most intense in the optic disc, might occur without any apparent intracranial disease. Pure papillitis was known to occur in simple anæmia. It seemed therefore fair to conclude that the intraocular end of the optic nerve was a structure peculiarly prone to inflammation. It was a difficult matter to connect papillitis with increase of intracranial pressure, for it was the rare exception in chronic hydrocephalus, where the intracranial pressure was raised to the highest point of which we had any knowledge. On the other hand, in cases of intracranial tumor with papillitis there might be no sign of increased intracranial pressure during the life of the patient. There might also be signs of increased intracranial pressure in cases of tumor without papillitis. If we rejected the theory that pressure on the cavernous sinuses was the immediate

cause, we could not absolutely ignore its influence on the retinal circulation. The great distention of the veins and the narrowing of the arteries took place mainly when the inflammation had reached a high degree of intensity, and these facts pointed to the inflammation in the nerve as the cause of the strangulation by pressure on the vessels. This view was confirmed by pathological investigations. The conspicuous constriction of the vessels was always in the papilla in front of the sclerotic. The most intense signs of strangulation might be seen in cases in which there was no reason to suspect the presence of intracranial disease. Distention of the optic sheath was frequently met with in cases of tumor with papillitis. It might also be absent in cases of tumor with internal hydrocephalus. It had been suggested that the fluid might be found within the sheath itself. If the sheath was the main lymph channel by which the fluid was conveyed from the eye, its distention in optic neuritis by a fluid escaping from the papilla was easily understood. But there was good ground for believing that the fluid found in the sheath passed into it from the sub-arachnoid space. He really knew very little of the relation which might exist between dropsy of the sheath and optic neuritis. The occasional occurrence of papillitis without it showed that it was neither the invariable nor the chief mechanical cause of papillitis.

It therefore seemed proper to draw the inference that we could not decide in any given case against the existence of a descending neuritis from examination of a small portion of the trunk of the optic nerve, and that a pathological change in the nerve deviating but slightly from the normal state might convey a condition of irritation to the eye which was sufficient to set up actual papillitis. It also seemed proper to draw the following conclusions in regard to the development of papillitis in intracranial disease:

1. In cases of cerebral tumor, evidence of descending inflammation might be traced in the sheath or nerve much more commonly than was generally supposed, while in cases of meningitis the evidence of descending inflammation was almost invariable.

2. The resulting papillitis might be slight or might grow intense, but we are ignorant of the causes which brought about this difference.

3. The mechanical congestion in these cases of papillitis did not always result from compression of the vessels behind the sclerotic ring, but always followed compression from inflammatory exudation in the papilla.

4. Slow increase of intracranial pressure had no effect on the retinal vessels, but the sudden increase of such pressure might intensify a papillitis originating in some other way.

5. Distention of the sheath alone was probably not sufficient to cause papillitis by its mechanical effects, but it might intensify the process otherwise set up.

ORBITAL OPTIC NEURITIS, INCLUDING ALCOHOL AND TOBACCO AMAUROSIS.

This was the title of Dr. H. Knapp's paper. He said that the cases in which people noticed a haze, a blur, even a perfectly dark patch in the centre of their field of vision, known under the name of central amblyopia or central scotoma, as well as those cases in which persons lost their sight in one or a few days without exhibiting any ocular or general disease to account for it, were explained more than twenty years ago by A. v. Graefe and Theo. Leber. They supposed the condition to be an inflammation of the orbital parts of the optic nerve, retrobulbar neuritis. This hypothesis had since been proven to be a reality by anatomical investigations. Retrobulbar neuritis might be idiopathic or the result of different kinds of intoxication, alcoholism, nicotinism, lead poisoning, diabetes, syphilis, etc. The condition might take on an acute or chronic form.

A number of very interesting microscopic specimens were exhibited to the Society. One showed the central interstitial neuritis in the period of nuclear infiltration, another in the stage of connective tissue hypertrophy. The process was characteristic by the limitations of its area of inflammation, circumscribed and triangular near the disc. In one specimen the changes passed like a band from the temporal border of the nerve across to the nasal side. This explained how the atrophy of the nerve might become total. In all of the specimens a certain number of healthy nerve-fibres were seen preserved in the atrophic parts. This showed how, in alcoholism, that total blindness was rare, and how, on the other hand, that, in the field of vision of persons blind from retrobulbar neuritis, islets of useful sight were permanently preserved. Retrobulbar optic neuritis presented an example of peripheric neuritis of great practical importance.

Asylum Notes.

STATE CARE OF EPILEPTICS.

The following bill, drawn up by Dr. Frederick Peterson, was introduced into the Senate by Col. W. L. Brown, Senator from the Fifth District, on January 29th. It is No. 190, and is now in the Committee on Public Health, consisting of Senators Richardson, Birkett and McCarren. It is to be hoped that any one who can do so will use his influence with members of the Legislature to see that this bill, which is destined to accomplish so much good for the unfortunate epileptics, will pass :

AN ACT PROVIDING FOR THE APPOINTMENT OF COMMISSIONERS TO ESTABLISH A COLONY FOR EPILEPTICS IN THE STATE OF NEW YORK.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION 1. Three persons, two of whom are residents of New York County, possessing expert knowledge of the needs of epileptics and the epileptic insane, and one of whom is a resident of Westchester County, shall be appointed by the Governor within ten days after the passage of this act, and shall constitute a Commission to determine upon the manner of providing for the education, employment, care and treatment of all of the epileptics and epileptic insane of this State, including those now congregated in the almshouses and insane asylums upon public charge, and also those not under State or county care. Said Commission is authorized to select a site in Westchester County as near as convenient to New York City, to consist of not more than three hundred acres of farming and wood land ; to adopt plans which shall furnish provision, on the cottage or pavilion system, ultimately for from one thousand to two thousand epileptics ; such plans to include methods of heating, lighting, sewerage, water-supply and prevention of danger from fire, and in addition to accommodations for dwelling purposes, to include school-rooms, work-shops, a hospital,

pathological laboratory and outbuildings for agricultural, floricultural, horticultural and dairy purposes.

Said Commission shall provide the land needed by purchase or otherwise.

SEC. 2. The members of said Commission, before entering upon the duties of their office, shall take and subscribe an oath or affirmation, before some competent authority, faithfully to discharge all the duties required of them by this act. They shall each be entitled to receive the necessary expenses incurred while discharging the duties assigned them.

SEC. 3. When said Commission shall have selected a site and complied in all respects with the provisions of Section one (1) of this act, a report thereof shall be made in writing by said Commission to the Governor, who shall thereupon appoint seven managers, who shall approve of the plans and let the contract, and have charge of the erection of the buildings, as provided by law. Said managers shall be appointed and confirmed according to the laws governing the appointment of managers of other benevolent institutions of the State. Provided, that the said Commissioners and Managers shall not enter into any contract for the erection of said buildings until the money has been appropriated by the Legislature to pay for the same.

SEC. 4. That there be and is hereby appropriated out of any money in the Treasury to the credit of the general revenue fund, not otherwise appropriated, the sum of ten thousand dollars for the expense of said Commission, and for the purpose of complying with the provisions of Section 1 of this act.

The accounts of expenditure, including the expense of the Commission, shall be audited and allowed by the Comptroller of this State.

SEC. 5. This act shall take effect immediately.

REPORT OF THE N. Y. STATE COMMISSION IN LUNACY, 1891.—PRIVATE PATIENTS IN PUBLIC ASYLUMS.

The Commission make an extended statement in their report, justifying their former order excluding private patients from the public State asylums.

First they repeat the organic law of the State, which alone permits the reception of private patients. It is in substance as follows :

The managers may, whenever there is a vacancy, authorize the superintendent to admit, under special arrangement, such recent cases as may seek admission under peculiarly afflictive circumstances, or which in his opinion promise speedy recovery.

Next, they call attention to the fact that practically all public insane must, by law, be taken to State asylums, and that all the insane now in poor-houses and county asylums must, as soon as room is furnished, be removed to State asylums.

The public asylums, they say, are built alone for the benefit of public patients, and that they are not pauper, but mostly those who are self-sustaining until they become insane. They point out that many rich chronic patients are kept in State asylums and also are constantly received, while the poor-houses of the State still hold hundreds of insane that should be in State asylums, and also that the chronic poor patients have been in the past discharged sooner than they otherwise would have been, for want of room, and that chronic private patients paying high rates for board have been retained. They say that private patients occupy the best rooms, from one to three or four, while public patients are crowded into dormitories or attics or sleep upon beds upon the floor or are detained in the poor-houses.

In a word, they defend their order upon arguments which, if fully sustained by facts, prove the need of it, and it seems to be made and enforced without show of personal feeling. In order not to keep out persons of moderate means, they have given orders that patients unable to pay at private asylums not more than \$10 a week may be admitted as private patients in State asylums, but only upon consent of the Commission in each case.

It is but fair to say that views opposed to those of the Commission have been ably advanced, and that they come from quarters abundantly able, from knowledge of the needs of the insane in New York State, to command the highest respect.

GHEEL.

Can anything new be said of Gheel? Certainly it can be told in a new way. Dr. George T. Tuttle, M.D., describes a two days' visit to Gheel, in the "Twelfth Annual Report of the Massachusetts Board of Lunacy and Charity," which is new in the thoroughness of observation, minuteness of de-

tail and in its graphic, almost photographic truthfulness of description.

It is a fact that of 1,700 patients, there is closed accommodation for but 80. But Dr. Tuttle truly says the patients of Gheel are "*twice* selected—once by the physicians who send them there, and again at the infirmary by the superintendent." In a word, the troublesome class is neither received nor kept at Gheel, but sent to the closed asylums at Belgium.

The closed building had but 62 inmates at the time of visit, and serves as a hospital as well as a place for restraint and the reception of all patients. Whatever may be said of the rest of Gheel, here is plenty of restraint—locked doors and barred windows, strong rooms closely resembling cells, and mechanical restraint, with little to beautify the wards and less to employ the patients.

A woman was most thoroughly and skillfully restrained to a bed, while a man, "apparently dying," was likewise restrained. In the cottages the belt with mittens or the camisole is occasionally applied, "but only on medical prescription." Dr. Peters, the superintendent, is reported as saying that he is inclined to think "non-restraint a dream, the complete realization of which is impossible, but that at Gheel they come nearer than Conolly did."

Of liberty at Gheel, Dr. Tuttle says: "It is not as absolute as some suppose; it is just what one might expect it to be, what it always must be, viz., according to the condition of the patient." He saw few patients abroad, and saw many in their quarters, and in these quarters he saw much squalor, crowding and bad ventilation, as well as some neatness and comfort.

If, as he truly says, the insane are as well cared for in creature comforts, in these homes, as is the ordinary Belgian peasant, it simply makes one feel glad one escaped such a condition of life, and regret that no higher intellectual stimulus is brought to bear upon the insane of that colony.

A closer association with educated physicians, the constant oversight of trained nurses and attendants, the endless variety of influences exerted in all modern well-regulated public asylums seem to be entirely lacking at Gheel.

The life there appears to be uniformly monotonous and cheerless. A truthful account of Gheel always leaves an unpleasant impression, and Dr. Tuttle's is no exception. It is, however, pleasant to know he considers Gheel never so

prosperous as to-day, and that the management under Dr. Peters is "able," and that he "is not blind to its defects."

FREQUENCY OF PARESIS IN EASTERN, WESTERN AND SOUTHERN ASYLUMS.

It still remains true that a casual examination of asylum reports shows a marked difference of paresis in different parts of the country.

The reports of four asylums, taken at random, illustrate the point.

The Northampton, Mass., Asylum admitted in 1890, 89 men and 79 women. Of the men, 7 were paretics, or one in every 12+ of those admitted. Of the women, 1 was parietic, or one in every 79.

The Buffalo, N. Y., Asylum, admitted 346 patients. Of these, 13 were paretics, or one in 26+. Unfortunately, the important table of forms of insanity of those admitted is not split up into sexes; but as 177 men were admitted, it is probable that about one in 14 was parietic.

The report of the asylum at Indianapolis, Ind., gives 664 admissions. Of these, 4 only were paretics. They were all men, and there were 380 males admitted. This State is by no means newly settled, but the population is largely rural.

The report of the Tuscaloosa, Ala., Asylum gives for thirty years 3,982 admissions. Of these but 63 were paretics, or one in every 63+; 58 men, out of 2,050 admissions, were paretics, or one in 35+; while 5 women, out of 1,932 admissions, or one in 384, also suffered from this disease.

Book Reviews.

TWELVE LECTURES ON THE STRUCTURE OF THE CENTRAL NERVOUS SYSTEM. For Physicians and Students. By Dr. Ludwig Edinger. Second revised edition, with 133 illustrations. Translated by Willis Hall Vittum, M.D. Edited by C. Eugene Riggs, M.D. Pp. 230. Philadelphia, 1890: F. A. Davis, Publisher.

A book of this character requires no critical review. It is sufficient that its subject matter be presented to the profession and that the general excellence of text and illustration be made known. The volume is no doubt familiar in the original to every reader of this JOURNAL, for since its first appearance, five or six years ago, it has been to each the favorite guide, for the study or the laboratory, to the mysterious and obscure fundamental structure of the central nervous system.

In twelve brief lectures the author has been able to describe explicitly the embryology, comparative anatomy, conformation and histology of the brain in general: the cortex of the cerebrum, the convolutions, the white substance, the

commissure and the corona radiata; the basal ganglia, base of the brain, the pons and the cerebellum; the medulla, spinal cord, spinal ganglia and nerve-roots. These are set before us so distinctly by means of lucid text and abundant drawings, that no one can fail to obtain from the book a comprehensive knowledge of the cerebro-spinal labyrinth as far as it has been explored in the present day.

While Edinger's work had reached a wide circulation in many countries and run through two editions, it was still beyond the reach of hundreds of students and practitioners, through the want of an English translation. It was fortunate for them that Prof. Riggs, of the Minnesota University, determined to have the book published in English form for the benefit of his students. The translation is thoroughly excellent throughout, and great credit is due Dr. Vittum for his careful rendition.

The American student loses nothing by having an American publisher, for, fortunately, the original German plates were secured for the 133 illustrations, and upon the whole the book is a good one, for the price, in point of typography, paper and binding. It is sold at so low a price, that it should run through more than one edition in this country.

BOOKS, PAMPHLETS, ETC., RECEIVED.

PRACTICAL THERAPEUTICS: A Text-Book. By Hobart Amory Hure, M.D. Philadelphia: Lea Bros. & Co., Publishers.

PRINCIPLES OF SURGERY. By N. Senn, M.D. F. A. Davis, Publisher.

TRAITEMENT DES TUMEURS BLANCHES, EMPLATRES MERCURIELS. Par Le Docteur Lucas-Championnière. Paris.

NATURE'S HYGIENE. By C. T. Kingzett, M.D. London.

TWENTY-FIRST ANNUAL REPORT OF THE MANHATTAN EYE AND EAR HOSPITALS.

THE CONTINUOUS USE OF THE BROMIDES. By L. W. Baker, M.D. Reprint.

THE EFFECT OF THE PRODUCTS OF HIGH EXPLOSIVES, DYNAMITE AND NITRO-GLYCERINE, ON THE HUMAN SYSTEM. By Thomas Darlington, M.D. Reprint.

THE PSYCHOPATHIC SEQUENCES OF HEREDITARY ENTAILMENT. By C. H. Hughes, M.D.

THIRTY-FIFTH ANNUAL REPORT OF THE TRUSTEES OF THE NORTHAMPTON LUNATIC HOSPITAL FOR THE YEAR ENDING SEPT. 30, 1890.

FORTIETH ANNUAL REPORT OF THE TRUSTEES OF THE NEW YORK STATE ASYLUM FOR IDIOTS FOR THE YEAR 1890.

OPINION OF THE ATTORNEY-GENERAL, HON. CHARLES F. TABOR: The Commission of Lunacy has no Authority to direct the Management of the New York Asylum for Idiots.

VICK'S FLORAL GUIDE, 1891.

THE MEDICAL EXPERT. By J. T. Eskridge, M.D. Reprint.

TWELFTH ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE INDIANA SCHOOL FOR FEEBLE-MINDED YOUTH FOR YEAR ENDING OCTOBER 31, 1890.

THE DANGERS ARISING FROM PUBLIC FUNERALS. State Board of Health of Pennsylvania Circular, No. 29.

- PATHOLOGICAL CHANGES IN CHRONIC ALCOHOLISM.** By Lewis D. Mason, M.D. Reprint.
- BIENNIAL REPORT OF THE ALABAMA INSANE HOSPITAL.** Years ending 30th September, 1889, 1890.
- THE PRESCRIPTION: A Monthly Journal devoted entirely to Practical Therapeutics.** Vol. I., No. 1.
- ON THE DANGERS ARISING FROM SYPHILIS IN THE PRACTICE OF DENTISTRY.** By L. Duncan Bulkley, A.M., M.D. Reprint.
- NOTE ON THE VIRILE REFLEX.** By C. H. Hughes, M.D., St. Louis. Reprint.
- THIRTY-EIGHTH ANNUAL ANNOUNCEMENT OF THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF VERMONT AND STATE AGRICULTURAL COLLEGE, FOR YEAR 1891.**
- A STUDY OF THE SOCIAL STATISTICS OF 4,663 CASES OF ALCOHOLIC INEBRIETY.** By L. D. Mason, M.D. Reprint.
- AN ADDRESS ON THE 20TH ANNIVERSARY OF THE AMERICAN ASSOCIATION FOR THE STUDY AND CURE OF INEBRIETY.** By Lewis D. Mason, M.D.
- HOW SHALL WE DEAL WITH THE INEBRIATE?** By L. W. Baker, M.D. Reprint.
- REMOVAL OF TONSILLAR HYPERTROPHY BY ELECTRO-CAUTERY DISSSECTION.** By Edwin Pynchon, M.D. Reprint.
- TESTS FOR SUGAR IN THE URINE.** By Brandreth Symonds, M.D. Reprint.
- A CASE OF HEMIPLEGIC EPILEPSY, PROBABLY DIABETIC, SIMULATING CEREBRAL ABSCESS.** By Robert Abbe, M.D. Reprint.
- THE THEORY OF PYREXIA.** By W. Hale White, M.D., F.R.C.P. Reprint.
- MECHANICAL OBSTRUCTION IN DISEASES OF THE UTERUS.** By Geo. F. Hulbert, M.D. Reprint.
- WHAT IS ORTHOPEDIC SURGERY?** By Newton M. Shaffer, M.D. Reprint.
- STATE OF NEW YORK STATE COMMISSION IN LUNACY.** Second Annual Report, 1890.
- ANNUAL REPORT OF THE POSTMASTER-GENERAL, 1890.**
- THE BREATHING MOVEMENTS IN RELATION TO VOICE-PRODUCTION.** By G. Hudson Makuen, M.D. Reprint.
- THE FRANKLINIC INTERRUPTED CURRENT.** By William James Morton, M.D. Reprint.
- THE CONSTRUCTION OF O'DWYER TUBES.** By Dillon Brown, M.D. Reprint.
- THE SURGICAL TREATMENT OF ERYSIPELAS.** By Dillon Brown, M.D. Reprint.
- RECENT LEGISLATION FOR THE INSANE IN STATE OF NEW YORK.** By Carlos T. Macdonald, M.D. Reprint.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

THE DEGENERATIVE DISEASES OF THE SPINAL
CORD, WITH THE DESCRIPTION OF
A NEW TYPE.¹

By CHARLES L. DANA, A.M., M.D.

THE primary degenerative diseases of the spinal cord as now known are :

Locomotor ataxia.

Lateral sclerosis.

The combined scleroses, multiple sclerosis, peri-ependimal sclerosis.

The progressive muscular atrophies, including amyotrophic lateral sclerosis.

Neuroglia sclerosis.

These degenerations have all a certain degree of kinship. Their causes are in many respects the same, the course of all is uniformly progressive, and one not very unfrequently complicates another.

The sharpest distinctions are found between those affecting the gray matter and those affecting the white. Degenerative process affecting the former tissue are much rarer and their course is more rapid and fatal.

It is a curious fact that the anterior and central parts of the gray are almost exclusively affected, consequently we have clinically only progressive muscular atrophy and its congeners, bulbar paralysis, ophthalmoplegia externa and amyotrophic lateral sclerosis.

¹ Read at a meeting of the N. Y. Neurological Society, Feb. 3, 1891.

The degenerations of the white matter are more common, slower in course, different in etiology and much more varied in symptomology. As a rule the gray matter is not much involved except secondarily and late.

The posterior roots and intervertebral ganglia are often diseased. Experiments seem to show that the anterior gray matter is supplied by a special plexus of vessels (*tractus arteriosus anterior* of Kudyi), while the lateral and posterior parts are supplied by other special plexuses (*tractus arteri-ori postero laterales*). It is further true that the gray matter is dependent on the blood supply for its integrity, while the health of the white matter depends largely on the nerve-cells to which its fibres are connected.

Among the various primary degenerations of the spinal cord, the combined sclerosis are those concerning which our knowledge is most unsatisfactory.

1. We have one quite well established clinical and pathological type, that of Friedreich's ataxia.

2. We have another class in which the sclerosis complicate paralytic dementia.

3. We have also the clinical type known as ataxic paraplegia.

4. There is, however, quite a number of cases in which combined sclerosis has been found after death, but in which the symptoms during life were of most irregular character. In 1887 I collected ("Medical Record," July 2, 1887), the histories of forty-five cases of combined sclerosis, with autopsies. Since then there have been reported thirteen other cases not including several of Friedreich's ataxia.²

² Since the publication of my article on ataxic paraplegia in 1887, there have been reported four cases with autopsy by Dr. J. J. Putnam: one case by Dr. M. Clark, *Brain*, 1889, Part LI.

Adamkiewicz, *Wien. Med. Press.*, 1. Centr. f. Neur., 1888, p. 272.

Oppenheim, *Centr. f. Neur.*, 1888, p. 649.

Glynn, *Liverpool Medico-Chirurg. Journ.*, July, 1889.

Dr. Cane, *Dublin Med. Journ.*, July, 1889.

Dana, *Brain*, 1889, 1.

Whiton, *Australasian Med. Gazette*, April, 1889.

H. Brauen, *Deut. Arch. f. Klin. Med.*, 1887-S. XLII., p. 459.

M. Sacelis, *Reforma Med. Roma*, 1888, IV., 1130, 11136.

Some of them presented during life the symptoms of ataxic paraplegia as described by Gowers, but others were of irregular course.

The question now arises, can we pick up any of these scattered ends and make of them anything definite and deserving a special name and type.

I believe that mainly through the efforts of Dr. J. J. Putnam, of Boston, this query may be answered in the affirmative. In the *JOURNAL OF NERVOUS AND MENTAL DISEASE* for February, 1891, he has described a group of cases of combined sclerosis of the spinal cord associated with diffuse collateral degeneration.

These cases clinically, etiologically and pathologically differ considerably from any of the other cases of combined sclerosis which I have seen reported.

In his description of one of them at the last meeting of the American Neurological Association, I was struck with its similarity to a case which had come under my observation. At the time it occurred to me that we had here something peculiar, and my observations made independently of Putnam have, therefore, a special comparative value.

Dr. Putnam reports the history of four other fatal cases in which no post-mortem was made.

Among the cases heretofore reported by others, it seems to me that that of Sioli may be included as belonging to Putnam's group.

If this be so, we have six cases with autopsies and four without on which to base a description of the disease.

Such a description would briefly be somewhat as follows:

ETIOLOGY.

The patients were in most cases (7 out of 19) women. The ages ranged from 45 to 64 years. In some there was a neurotic inheritance, and in several lead was found in the urine at times. No distinct history of syphilis could be made out in any instance, nor were the patients alcoholic.

The disease ran a rather rapid course, varying from nine months to four years, and averaging two years.

SYMPTOMS.

The symptoms began generally with numbness of the extremities, followed by progressive enfeeblement, and ending always in a preterminal paraplegia. Great emaciation and anæmia were present, and there was often an obstinate diarrhœa.

No paralysis of any special groups of muscles occurred until the final paraplegia set in.

There were in some cases anæsthesia and ataxia, but spastic symptoms with exaggerated knee-jerk and ankle clonus were the more common.

Lancinating or girdle pains were very rarely present.

The arms were affected, but less than the legs. The vision and other special senses and speech were not disturbed. Mental symptoms approaching dementia were observed in the terminal stages in some cases.

The general course was that of a rather rapidly progressive affection causing paræsthesia and sometimes anæsthesia of the extremities, especially the lower, with progressive weakness of the extremities. This was associated with anæmia, general muscular emaciation, diarrhœa, ending in a paraplegia.

PATHOLOGICAL ANATOMY.

The pathological appearances of the spinal cord in this group of cases is described by Putnam in words which so perfectly fit my own case that I cannot do better than use them.

"In all the cases, two sets of changes in the cord are recognizable, one of older date, consisting in a relatively dense sclerosis in the posterior columns and in the lateral column (mainly confined to the pyramid tracts); and one of sub-acute character, and evidently of quite recent occurrence. This sub-acute process was, as regards the white columns, partly in new tracts, partly around the borders of the more dense sclerosis, and was chiefly characterized by the perforated appearance, now familiar to every pathologist, which actually results, perhaps, from the post-mortem changes in-

duced by hardening, but indicates a somewhat rapid destruction of nerve-tubes with the œdematous distention or destruction of the intervening septa, associated with the formation of granule cells.

In the gray horns, the degenerative change (partly recent, partly of older date) was indicated by a disintegration of nerve-cells. In certain parts of some of the cords, indeed, the almost entire destruction of nerve-cells shows that, in them, the ganglionic matter as well as the white columns had borne its full share of the brunt of the degenerative process."

The nerve-roots in certain regions, usually the posterior, lumbar or sacral, are somewhat involved. The peripheral nerves in the cases examined showed no especial change.

The brain and medulla are not affected.

The morbid process in the spinal cord is not primarily inflammatory, though some reactive meningitis may occur in the terminal stage.

The cases in question do not all resemble each other closely, but they do seem to be much more nearly allied to each other than to any known form of systemic spinal degeneration.

Their differentiation as a special group seems measurably justified by the following considerations :

Etiologically, it is peculiar in occurring so often in women and at a comparatively advanced period of life. Syphilis does not appear often to be a factor in its cause.

Symptomologically it is distinguished by its almost sub-acute course, by the presence of paræsthesiæ and often of anæsthesia, with, as a rule, spastic symptoms, and finally paraplegia. Pain also is not common. Ataxic paraplegia, on the other hand, runs a very chronic course, anæsthesia is quite rare and paraplegia comes late.

Anatomically it is peculiar in the fact that the degenerative process is rapid, and accompanied with a peculiar collateral or terminal softening. The lesion is also less diffuse than in ataxic paraplegia, and involves the root-zones of the posterior column and the posterior columns generally, more than in the allied disease.

Its distinction from locomotor ataxia with secondary lateral sclerosis is in every way most marked.

It may be said, perhaps, to bear some resemblance to those secondary changes in the cord which occur in general paralysis. But none of the reported cases had this disease, though one was somewhat demented a short time before death.

The history of my own case, for the details of which I am indebted to Dr. Leo Etinger, house physician at the Montefiore Home, is as follows :

Babette S., 44, Prussia, wid.

Family history: Mother died at 80, suddenly, with symptoms of acute dyspnoea ; father at 70, after losing his fortune, brooded over it, became somewhat demented. Three brothers alive and well, two sisters also; none dead. Husband died four years ago of some pulmonary trouble. His children by another wife, quite well. Thinks she had an aunt who may have had some paralytic trouble.

Personal history: Ill since July, 1889. Had measles as a child ; was a fairly healthy, but delicate child. Went to school ; found work easy ; left at 14 ; married at 32, Menses at 12, were quite regular. Still has her menses, latterly more frequent ; more blood lately ; no miscarriages ; no children. Eight years ago, while engaged with a thief, covered by the latter with the boxes and show-cases in the cigar-store owned by her husband. Later struck senseless by a blow in the face ; remained in bed two weeks ; then obliged to appear in court. Ever since her nerves have been unstrung. For the last three summers subject to diarrhoea. Her right leg had been swollen for some two or three years, but could do her work without trouble.

Last July (1889) attacked by weakness, vomiting, diarrhoea, and she believes some fever. Confined to bed for a week or ten days. Then got up. Returned to bed shortly ; kept on going to bed and getting up for two months. In the beginning of September had some family trouble, which brought on an attack of screaming, crying ; was entirely conscious. Same evening felt weak all over and had diarrhoea. Says that latter occurs after every ex-

citement. Went to bed the same evening ; remained there ever since. Has had jerking movements of her legs, especially the right. Gradually lost her power in both legs, especially the left, which was always thinner. From time to time has a sensation of pins and needles in her heels. Has not had any pain, except with every change of weather she has queer, indescribable, somewhat painful feeling in both lower extremities, more marked in the right and in the thighs than in the legs. Finds that sometimes she passes too much water and at other times not enough. Two weeks ago was twice catheterized, not having passed her water for twenty-four hours. With passage of water sometimes had a movement of her bowels in spite of herself. Appetite is poor, sleep poor and restless. Sometimes the bowels do not move at all, at other times too much, with tenesmus.

Status præsens: A woman of slight build, skeleton small, eyes dark, height below medium. Mucus membranes very anæmic.

The patient on admission could barely walk with assistance. She was put in bed and her paraplegia speedily increased, but never became so great that she could not move her legs somewhat.

The legs and thighs were considerably wasted, the left more than the right. They were slightly drawn up and she suffered at times from painful contractions in them.

The knee-jerks and superficial reflexes were abolished. There was no cutaneous anæsthesia ; the presence of ataxia could not be satisfactorily tested ; there was no pain other than that referred to. She had some disturbance of the bladder. Her bowels were usually constipated, but at times under nervous excitement she had an obstinate diarrhœa. The arms were not much affected, though they were weak.

She was at times delirious and had delusions.

Vision was not affected.

She gradually grew weaker, and six weeks after admission died.

At the autopsy only the brain and cord were examined. The brain appeared normal.

The dura mater of the spinal canal was normal. On opening it an extensive softening was apparent in the lower dorsal region.

Aside from these local disturbances here, there were no gross evidences of disease. On sections an apparent sclerotic change was observed in the lateral and posterior columns throughout the cord.

The specimens were hardened in Müller's fluid and stained with hæmatoxylin, aniline blue, and by Weigert's and other methods.

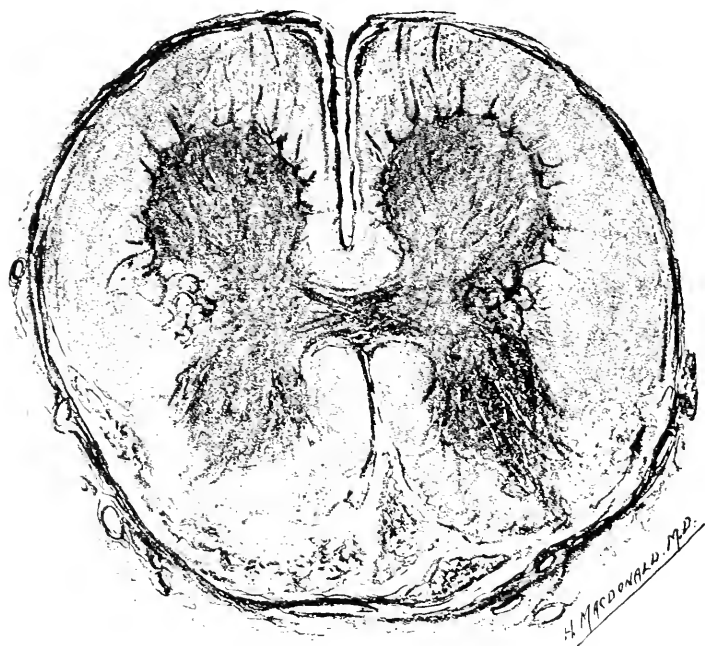


FIG. 1.—Section at level of upper lumbar cord, showing the lateral and posterior degeneration and the terminal softening.

Microscopic examination showed the most active and recent process to be in the lower dorsal region posteriorly. Here the cord is softened by a process necrotic in nature, which is confined externally by the thickened meninges and internally by a pretty sharply defined wall of healthy cord

tissue. Lower down, at the tenth dorsal, this process has extended further anteriorly, until it cut the cord nearly in half.

The softened area in some sections is filled with debris of nerve tissue. Enlarged vessels are seen near the edge.

Outside the meninges is an exudation of lymph.

Besides this there was a degenerative sclerosis of the lateral and posterior columns throughout the spinal cord. The process in the lateral columns was confined chiefly to the pyramidal tracts, but in the cervical region extended forward and involved the cerebellar and ascending lateral tracts. The posterior column shows a slight focus of beginning softening in the lower cervical region, and in the lateral columns the degenerative process seems rather subacute. It is not a hard sclerosis. The spinal nerve roots are not affected except the posterior roots in the lumbar region.

The morbid process on the whole was apparently a sub-acute systemic degeneration, with a terminal focal softening. Associated with the last stage was a local reactive inflammation with some lymph exudation.

DESCRIPTION IN DETAIL.

On a close study of the changes of different levels one sees that at the *cervical level* the pia mater is somewhat thickened and shows evidence of a recent, but slight, meningitis, especially anteriorly and in the median fissure.

There are areas of sclerosis in the lateral and posterior columns in the regions indicated in the cuts.

The area in the lateral columns occupies the region of the crossed Pyr-tract, direct cerebellar and anterior ascending tracts. The lateral areas are studded with vacant spaces made by the swelling of the myelin sheath. These are more marked about the periphery of the diseased tracts. The process is more advanced on the left side. On each side there is a good deal of hyperæmia of the affected areas.

The process in the posterior columns is more advanced, than in the lateral and also attended with more hyperæmia, and occasional small hæmorrhages.

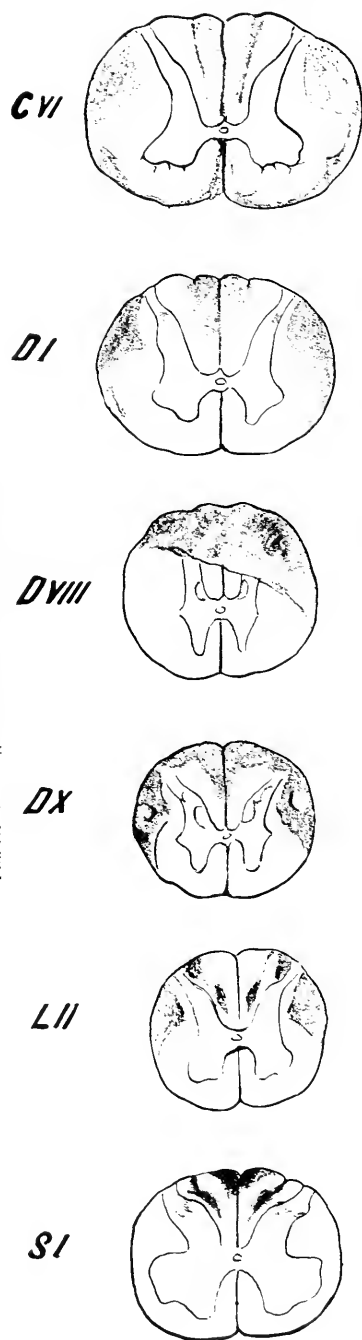


FIG. II.—Showing the affected area at different levels.



FIG. III.—Showing the vertical distribution of the terminal softening.

The anterior median columns are slightly affected with the vacuolizing process, but show no softening.

There is a good deal of congestion of the central gray and anterior horns.

The anterior cervical-cells and nerve-roots are not especially affected.

Sections made through the upper part of *the dorsal cord* show similar changes to those above described.

Lower down the cord was too soft to cut, but the posterior and lateral sclerosis can be distinctly followed with the naked eye.

At about the level of the sixth dorsal, the posterior and lateral change begins to run together until about the ninth, cord is nearly cut in two by a disintegrating process.

At this neighborhood there is a reactive meningitis, with much exudation of lymph, but no pus.

At the level of the twelfth dorsal nerves, good sections can be obtained. These show a very distinct lateral sclerosis, occupying chiefly the region of the lateral tracts, and a posterior degeneration more marked on one side.

A destructive process lying within the pia has affected the posterior border of the posterior and lateral columns. There is here a very little of the vacuolization in the lateral and anterior median columns. The gray matter is congested. The cells of the column of Clarke are not affected except slightly on one side. The anterior horn cells are also but slightly involved. The root shows no degenerative changes.

At the *level of the first lumbar* there is decided degenerative change in the posterior columns, but very slight in the lateral.

There are a few cells of the column of Clark. The anterior and interior groups of cells of the anterior horns are atrophied.

There is a decided degenerative of the posterior roots, but not of the anterior.

The same description applied to the *level of the sacral*.

GENERAL REMARKS.

The *vessels of the cord* show no marked degree of degeneration, and the morbid processes can not be ascribed to their blocking up and obliteration. It seems to be rather a primary and rapid systemic degeneration, which was cut short by the focal softening that caused paraplegia and death.

The local process could not have caused the degenerations secondarily, as may be seen by its position, and the length of the history and symptoms point to the lateral columns as having been first affected.

The peculiar vacuolization of the degenerated areas, which was marked and characteristic in Putnam's cases, is present here, but not to any striking extent.

This process cannot be considered as indicating anything more than a rather rapid degeneration. It is seen in greater or less degree in almost all degenerative and inflammatory disorders, and is an œdematous swelling of the nerve-tubes which precedes their disintegration. Hence it is more marked in my case in the periphery of the degenerated areas, when the destructive process had not gone far.

The condition in which this vacuolization is still the prominent change in the system disease occurred in one case of ataxic paraplegia described by Dr. Græme M. Hammond, and reported by me in my article on this subject ("Medical Record," *loc. cit.*). In this case the patient was syphilitic and phthisical. He had marked ataxic and spastic symptoms, but the vacuolization and most of the morbid change was in the posterior columns of the spinal cord.

Pathologically, then, the principal characteristic of this case is its rapid course, its primary character, its systemic distribution, the terminal softening.

The brain, it should be added, was carefully examined. It hardened well and showed no evidence of morbid change in the meninges or exsection.

A CASE OF BRAIN TUMOR WITHOUT CHARACTERISTIC SYMPTOMS.

By GROS. R. TROWBRIDGE, A.M., M.D.,

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THE following case is interesting from a negative standpoint, but one which will not materially strengthen, either theoretically or practically, the researches in cerebral localization; still it presents features which make it interesting and of sufficient importance to be the source of a few comparisons and conclusions.

It presents conditions which, according to the most recent theories, should produce very evident results. These results, however, are entirely absent, and we have one of those peculiar phenomena the negative effects of which can only be accounted for theoretically, and I do not think that any practical or reasonable explanation of such can be made.

The existence of a morbid growth was not suspected at all, as there were no signs or symptoms pointing to such a condition, except the existence of epilepsy, and this may arise from so many various causes that it would be ridiculous to suspect or diagnose a tumor in any particular part of the brain unless the convulsions were localized. I will give the history complete as it appears on the case book:

J. C., admitted December 7, 1886; male, aged 47; native and resident of Pennsylvania; single; no occupation; about five feet eight inches tall; rather thick set and fairly well nourished, but said to be losing flesh lately; heavy features, brown hair and eyes; eyes inflamed at inner canthi; tongue, bowels, temperature and pulse normal; talks in a slow, drawling tone; comprehends fairly well, but his memory is exceedingly deficient even for recent events; makes frequent misstatements; while talking makes motions continually as though drawing a thread through his fingers; conversation is disconnected; there is no known tendency to neurotic disturbances or insanity in the family. During 1876 the

patient had a severe attack of typhoid (?) fever, and a few months after convalescence became epileptic. The typhoid (?) fever was given as the cause of his insanity. The epileptic seizures have been increasing both in number and severity, and are both diurnal and nocturnal. During past eight or nine months has had especially violent attacks, alternating with periods of more or less stupidity. At certain periods he is inclined to be excited and even violent, and it is noticeable that this excited state is in inverse ratio to the number and severity of the epileptic attacks. During his excited period he destroys clothing and denudes himself. On one occasion he wandered away from the hospital. Is obstinate and tenacious in his demands and desires. Was treated for epilepsy in the University Hospital in Philadelphia in 1881, without permanent improvement.

Was brought to this hospital from New York City, where he had undergone an operation for double strabismus. Operation performed about ten days ago. No strabismus exists at time of admission. The diagnosis in this case was "epileptic mania."

December 27th.—Has had five "fits" (*grand mal*) since admission, on one occasion bruising face severely. For first few days was very much excited and troublesome to put to bed; lately has been orderly and quiet. Removed to a quiet ward.

January 6, 1887.—Is stupid and seems helpless; takes no care of himself; requires feeding with a spoon; confined to bed. Condition followed a period of excitement resulting from a series of fits; excited period lasted about a week.

March 3d.—Is quiet and orderly; causes no trouble; is in good physical condition.

June 8th.—During the past three months has had one fit each month.

Since admission there is the following record of epileptic seizures: In 1886—December, 10. 1887—January, 3; February, March, April and May, 1 each; June, 4.

From this date there is a gap in the history until December 24, 1888.

The only information I can get to fill this up is the record of the number of "fits" he had during this time, and from this it is fair to conclude that he remained in a stationary condition. The average number of epileptic seizures was about three a month, so undoubtedly his periods of excitement and depression varied accordingly.

Taking up the history again, we find, under December 24, 1888, the following entry:

Physical condition is excellent; mental condition stationary. While under epileptic treatment¹ he has but few convulsions, but if it is discontinued the attacks increase and he becomes irritable and excited. He always has some complaint to make to the physician either about the attendants or other patients. Goes out walking and works in the ward and about the grounds.

May 1, 1889.—Stationary.

July 9th.—Had an attack of dysentery, which was hemorrhagic in character from the first.

Death occurred on July 12th.

AUTOPSY (twenty-five hours after death).—Post-mortem changes had already begun. Body well nourished. Head only examined. Dura mater adherent to base of skull and somewhat congested, but beyond this normal. Pia mater opaque, thickened and much congested, particularly over the fissures of Sylvius. Marked adhesions in longitudinal fissure between frontal lobes.

Brain.—Weight fifty ounces. Cortex soft and adherent to pia mater. Decortication especially marked in anterior part of right frontal lobe and also over right temporal lobe. Entire gray matter of right temporal lobe soft and almost fluctuating; very much thinned at apex of lobe, so that in removal of brain it was ruptured, with the escape of a slight quantity of straw-colored serum. This fluid was found to have escaped from a cyst occupying the anterior part of the third temporo-sphenoidal convolution and the uncinate gyrus, and apparently was connected with the descending horn of the lateral ventricle. The cyst presented smooth, glistening walls and had a capacity of about fl 5 ii.

The anterior one-third of the second temporo-sphenoidal convolution was atrophied and diminished about one-third of its natural size. At the extreme anterior portion of this convolution was another cyst, somewhat smaller than the first and containing a clear serum. Bottom of sulcus between

¹ Bromide of ammonia,
Bromide of sodium, aa, gr. xv.,

} suspended in a tonic mixture t. i. d.,

and a pill of

Oxide of zinc,

Extract of belladonna, aa, gr. $\frac{3}{4}$,

} at night.

first and second temporo-sphenoidal convolutions soft and greatly disintegrated, breaking down easily. First temporo-sphenoidal convolution soft and gelatinous in appearance in anterior part. Occupying the anterior part of third temporo-sphenoidal convolution was found a hardened mass, size of small hickory-nut, irregular in outline and nodulated. On removal it was found that there were four small growths, the size of peas, connected by fibrous bands with the large tumor.

Such is the complete history of the case and autopsy. Before I go further, let me briefly recapitulate the parts involved by the morbid growth and diseased processes:

I. Anterior part of third temporo-sphenoidal convolution occupied by a cyst and the tumor.

II. Uncinate gyrus filled to a great extent by a cyst.

III. Anterior one-third of second temporo-sphenoidal convolution atrophied and extreme end occupied by a cyst.

IV. Anterior part (about one-third) of first temporo-sphenoidal convolution softened.

In addition to this there was great destruction of gray matter in other parts of the lobe.

Ferrier makes the following statement:⁴ "Among the reactions consequent on electrical irritation there is one the significance of which might almost be deduced *a priori*. The reaction in question is that which occurs on electrical irritation of the superior temporo-sphenoidal convolution, viz., pricking of the opposite ear, associated with wide opening of the eyes, dilatation of the pupils and turning the head and eyes to the opposite side."

He has by his many and varied experiments on animals shown conclusively that the centre for hearing is situated in the superior temporo-sphenoidal convolution, and that removal of this structure destroys the sense of hearing in the opposite ear; that complete destruction of this convolution in both temporal lobes will cause absolute deafness; and, finally, electrical stimulation of it will produce the so-called subjective sensations of hearing, as he mentions in the reference given.

In his conclusions he says:³ "In at least a dozen cases in which I have established the most extensive lesions in, or entirely removed the whole of the temporo-sphenoidal lobe, with the exception of the superior temporo-sphenoidal convolution, on one or both sides, I have obtained clear indications of the continuance of signs of perception of auditory stimuli, indicated by twitching of the ear and turning to the origin of slight sounds, such as tapping, scratching or whispering close to the ear."

I think Dr. Ferrier has proved conclusively, both from positive and negative standpoints, that the auditory centre is situated in the superior temporo-sphenoidal convolution; but either this centre is circumscribed or variable, or if it occupies the whole extent of the convolution, then my case was a unique one.

His experiments on animals have consisted in stimulation of, and partial or complete removal of, this convolution, and in all his cases he has produced some change in the auditory function. He has shown that stimulation by the battery produced *subjective* sensations of hearing. In the case under consideration there was no electrical stimulation, but in its place there was irritation of this convolution caused by the presence of a morbid growth and destruction of brain tissue, and it would be fair to expect either defective hearing or some subjective sensations of hearing, and to go a step further, it would not have been unreasonable to expect an auditory aura, as there is no doubt but that the tumor was the cause of the epilepsy; yet, in spite of the extensive destruction of this centre, *there was absolutely no impairment in hearing*. The patient never made any complaint, and was always able to hear as well with one ear as the other.

Gowers⁴ cites a case of a large tumor of the temporal lobe, the most of it being situated in the superior temporo-sphenoidal convolution. In this case the patient was an epileptic, the convulsions being preceded by an auditory aura referred to the opposite ear.

³ Functions of the Brain, page 310.

⁴ Manual of Diseases of the Nervous System, page 454.

Dr. C. K. Mills⁵ cites another case of tumor of the first temporal convolution and Sylvian fossa, in which there were unilateral convulsions, and these were preceded by an auditory aura, resembling the rumbling of machinery, in the opposite ear.

Here we have two cases where there existed an auditory aura before the onset of an epileptic convulsion, due to the irritation of one of the auditory centres by a morbid growth, and designated as "subjective sensations" of hearing. Nothing of this nature was present in my case. There was no aura of any kind, nor did the man ever complain of hallucinations of hearing at any time. As a general rule, a person who is partially deaf in one ear will, under all possible circumstances, make the other member do the work. Then, again, had the patient been troubled by defective hearing, I am almost positive he would have mentioned it, as there was no pain or ache incident to the human race which he did not have (?).

I grant that this is only one case, and the fact of the great preponderance of evidence against it makes it seem to me to be a unique one. On the other hand, I think it is fair and reasonable to draw the conclusion that it is *possible* for extensive lesions to exist in about these centres without impairment of their special functions, or else the centres are so numerous and extensive that there can be loss or destruction of a number of them without producing serious results, or at least serious enough to manifest themselves.

Two other centres of special sense seemingly should have been involved by the tumor, cysts, etc., viz., those of smell and taste. Dr. Ferrier states⁶ that "affections of smell and taste are evidently related to lesions of the hippocampal lobule and neighboring regions." Besides these centres, those of common or tactile sensibility he locates in the hippocampal region. Dr. William Worcester, of the State Lunatic Asylum, Little Rock, Arkansas, reports the following case:⁷

⁵ Brain, October, 1889, page 393.

⁶ Functions of the Brain, page 326.

⁷ American Journal of Insanity, July, 1887.

Male, aged 30; had epilepsy for about three years. After admission had several severe convulsions, preceding which he had subjective sensations of smell, "at first constant, but of late transitory." Said he smelled smoke at night, and at other times he noticed an odor resembling the vapor of alcohol.

The necropsy revealed a focus of softening in the anterior part of the left temporal lobe, extending to the surface and also "involving the pes hippocampi in the floor of the descending cornu of the lateral ventricle."

In this case there was a disturbance of the olfactory centre of sufficient intensity to cause subjective sensations of smell, but there was no impairment of tactile sensibility, the centres for which are in all probability located in the hippocampal region. Drs. J. Hughlings Jackson and Charles E. Beever report^s a case of epilepsy in which the patient, a female, had both auditory and visual aura before the epileptic seizure. In this case the autopsy disclosed a tumor of considerable size occupying the extreme tip of the right temporo-sphenoidal lobe, and consequently involving the olfactory centre on that side. In this case we have the cause, and the consequent effect, for there is no doubt but that the disturbance in the sense of smell was due to irritation produced by the growth. Here is the other peculiarity of my case. There was no impairment in the sense of smell. There were no "subjective sensations" of smell either before the epileptic seizures or at any other time. In both of the preceding cases there was disturbance of this function. In my case I can account for this theoretically in two ways: First, either there was total destruction of the right olfactory centre and the left nostril performed the function for both, or else there was not *sufficient* destruction of the cells in this centre to cause the disturbance. The first would not be strange, as the two nostrils are in such close proximity that one could assume the labor of both without being noticed by the person, while that of hearing (the organs being such a distance apart) would be easily noticed. Neither Dr.

^s Brain, October, 1889.

Worcester's nor my own case would support the theory of the tactile sensibility centre.

A microscopical examination of the tumor showed it to be a fibroma. For the preparation of the section of the specimen I am indebted to my colleague, Dr. Hugh B. Meredith, of this hospital.

I only report this case to show how extensive trouble may exist in close proximity to these great centres and still cause no disturbance of their functions.

COMPARISON OF THE THREE CASES.

				PARTS INVOLVED.
CASE I.	Reported by Dr. William Worcester.	Epileptic for about three years.	Hallucinations of smell.	Left uncinate gyrus; white matter of left temporal lobe; pes hippocampi; small focus of softening in white matter of left frontal lobe.
CASE II.	Reported by Dr. J. Hughlings Jackson.	Epileptic for thirteen months.	Hallucinations of smell and sight.	Right uncinate gyrus; hippocampal lobule; entire anterior extremity of right temporo-sphenoidal lobe; central white matter of right temporo-sphenoidal lobe.
CASE III.	Reported by Dr. G. R. Trowbridge	Epileptic for thirteen years.	No disturbance of special senses.	Anterior part of third temporo-sphenoidal convolution; uncinate gyrus; anterior part of second temporo-sphenoidal convolution; anterior part of first temporo-sphenoidal convolution. (Right side.)

HYSTERICAL MANIA ?¹

A CLINICAL STUDY BASED UPON SIX CASES UNDER TREATMENT AT THE SAME TIME IN THE FRIENDS ASYLUM.

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I HAVE queried the title to this paper, first because it is disputed that such a form of mental disease exists as a separate symptom group, and second because I think the condition is better expressed by the term maniacal hysteria. Hysterical symptoms are apt to be present at some time in all forms of insanity, and especially in melancholia and puerperal insanity. Still, the careful study of the cases on which this paper is based, and others, seems to me to warrant the separation of a symptom group, to which the term hysterical mania or maniacal hysteria may properly be given. I would define maniacal hysteria as a form of mental disturbance, characterized by exaltation, sometimes varied by depression, varying degrees of violence, irrational conversation, with or without hallucination, and without delusion; accompanied by exaggerated conduct, the actions of the patient being purposive and suggested, and governed by their surroundings.

There are three conditions present in hysterical mania which differentiate it from simple acute mania, or mania with delusions, and it is upon the presence of these conditions that the diagnosis mainly rests. They are, the retention of memory, the absence of mental perversion, and purposive conduct.

The history of these cases is analogous to that of ordinary hysterical manifestation. Indeed, it might be called a transcendent form of hysteria, in which maniacal exaltation and exaggerated conduct replace the more usual con-

¹ Read before the Philadelphia Neurological Society, Feb. 23, 1891.

vulsions, paralysis, and cataleptic seizures. The immediately exciting cause is almost always an unusual mental overstrain, or extreme physical exhaustion from disease. These causes usually produce their effect upon an already unstable nervous organization, but it sometimes happens that an individual with a history free from neurotic taint may, as a result of profound physical or mental exhaustion, develop hysterical mania, on account of the nervous mobility resulting from the impaired vitality. This was the history of the first of the group of cases:

Miss C., a dressmaker, thirty-two years old, was admitted to the asylum June 5, 1889, with the following history: Previously in good health; she had been working at her trade very closely, and had not had sufficient food or exercise during the preceding fall and winter. In the early spring she became anæmic and began to suffer from insomnia. She finally became too weak to work and went to bed, but did not have proper nursing or sufficient food. In the latter part of May she began to be excited, talking a great deal about her being neglected; she also had attacks of convulsive weeping; finally she became violent, tried to escape from her room, and fought and struggled with her attendants, who endeavored to keep her in bed. While in this condition she was brought to the institution.

She was quite violent at first, noisy and obscene, her conduct purpositive guided by her egotism, and directed so as to shock and annoy those around her. Her self-consciousness was unbounded, and she constantly tried to attract and arrogate to herself the attention of every one who came near her. She soon quieted down, however, and in two weeks was up and about the ward. She was fully conscious of her surroundings and was alternately exalted and depressed. During the periods of depression, she would cry and bemoan her fate, but when exalted she became inspired with religious fervor, and declaimed by the hour, or decked herself out gayly and fantastically and paraded up and down the ward. These performances never took place, however, except before an audience; she was especially excited by the presence of men, and would assume suggestive attitudes. These alternating periods of exaltation and depression, at first occurring every day, gradually were separated by intervals which increased, until her conduct became entirely rational, at the end of six weeks. She was

discharged restored, Aug. 22, 1889, but with a vivid memory of what she had passed through.

The next case illustrates the operation of ill health and over-excitement upon an already unstable nervous organization. Mr. R., at twenty-one years, was admitted to the asylum as a patient, July 24, 1889, in a violently maniacal condition. History as follows: His father is an Italian, his mother German; family history negative. He had typhoid fever when twelve years of age, but recovered fully. Has been, until recently, quiet and retiring in disposition, good tempered, and a great favorite with his mother. About two months previous to his admission, he became enamored of a young girl employed in a store in the city. She did not receive his attentions with favor, however, and he became very much depressed. His fellow employees in the store where he was a clerk noticed a great change in his manner and conduct, before it was noticed at home. He became egotistical and bombastic, and would fly into a passion at every trivial and fancied slight. About three weeks before his admission, his family noticed that he was acting in a peculiar and unusual manner. He became restless and excited, and very irritable. He would come into the house, and not finding anyone there to meet him, he would throw himself down on the floor with a loud cry, and feign unconsciousness. A short time before he was brought to the institution his excitement increased, and he became noisy and destructive. He also became very much exhilarated and intensely self-conscious and egotistical. He was very much excited when brought to the institution, and quite belligerent, but he quieted down soon after being put in the ward. His history while in the house is so graphically descriptive of this form of mental disturbance, that I can do no better than transcribe from the notes of the case during its progress. The day after admission, it is noted that he is very much excited and emotional. He is very dramatic, striking all sorts of attitudes, tragic and pathetic, and appealing to the sympathy of those around him. He cries, runs up and down the ward, falls into a chair in feigned collapse, then jumps up, takes a threatening attitude, becomes profane, and threatens to kill anyone who comes near him; again he becomes declamatory, and boasts of his great strength and prowess. He is very capricious and obstinate. His pupils are very mobile, and generally widely dilated. His expression is also very mobile, depicting grief, rage, scorn, and fury in rapid succession. His manner is

exaggerated and dramatic; skin moist and warm; pulse 84, full and soft; physical condition fair; appetite good, but tongue coated and bowels constipated. His condition is typical of the class of cases to which he belongs. Two days later it is noted that he is very noisy and meddlesome; is either singing or declaiming or crying. Whenever he can get an audience he gets very emotional and dramatic, reeling about the hall and falling in all sorts of attitudes, doing everything in his power to attract attention and sympathy. Again, a week later, he is much affected by his surroundings, is hilarious and declamatory, indulges in bombastic assertions about his importance, is very much excited and emotional, making dramatic gestures, assuming attitudes tragic and pathetic, storming and denouncing, then crying and supplicating, and finally falling back in apparent collapse; eyes closed and limbs relaxed. Again, a month later, after a period of comparative quiet and great improvement in his physical condition, he is still very egotistical, and promptly resists restraint. Is very capricious and all his actions are exaggerated and dramatic. He still sings and declaims and never lets an opportunity of attracting the attention of those around him go by. He is intensely jealous of any attention shown any other patient, and is constantly making extravagant demands upon the attendants. Lately he has been coming out of his room in the morning with nothing but an undershirt on and running up and down the hall, exposing himself at the windows, and singing. When put back in his room he becomes very violent and abusive. When he can attract attention in no other way, he will throw himself in a chair, or on the bed, and groan and writhe as if in great pain; again, he will burst into hilarious laughter or else into violent and convulsive sobbing. In the midst of this he will jump up, run to his window and begin to sing as loudly as he can. A month later is this note, following another period of quiet and comparatively rational behavior. Has been growing steadily more excited, his being allowed to go about out of doors and spend his evenings in the sitting-room with the other patients, having the effect of increasing the disturbance. He talks loudly at table and makes constant effort to attract every one's attention to himself, and the same way when among the other patients in the evening during their social intercourse. Failing to attract attention to himself in this way, he gets excited, walks up and down the room with clenched hands, glaring around him wildly. This failing, he will throw himself into a chair, pretending to have

fainted. During the next month he was kept quiet and away from the other patients. His meals were served in his room, as his egotism is still so prominent that the presence of others excites him to ebullitions of self-praise, or, failing to attract attention in that way, to insolence and unbecoming conduct. Even in the absence of any excitement, he will run about the room and sing and declaim; a favorite practice was to get up in the morning, put on his under-clothing and shoes, and a gaudily striped and tasselled cap; then, with a tennis racquet in his hand, perch himself upon a window seat, in a dramatic attitude, and sing out of the window, "I dreamt I dwelt in marble halls," his object being to attract the attention of anyone who might pass by; when compelled to desist, he gets violently angry and abusive, and failing to make an impression, will throw himself upon his bed or a chair in apparent exhaustion, with eyeballs rolled up and lids partly closed, his limbs moving convulsively while he utters groans and deep sighs. After the attendant leaves the room, or something occurs to attract his attention or excite his curiosity, he will jump up and begin to whistle and sing as if nothing had happened. He is very jealous of any attention or privilege shown any other patient, and is constantly making unreasonable demands, and becoming violently angry when they are not obeyed. Within the next month he improved very rapidly, although still very egotistical and self-conscious; at the end of that time he was removed by his family on trial. The improvement continued and he was discharged. He is now, a year afterward, in business and apparently recovered. This case may be regarded as a typical one, illustrating a pure manic-hysteria.

The next case is an analogous one in causation and course, but occurring in the opposite sex.

Mrs. D. was admitted as a patient August 30, 1889, with the following history: Two weeks ago, while at Atlantic City with a companion of whom she was very fond and also jealous, she began to be depressed, and sat around the house listlessly, saying nothing and doing nothing. When excited or opposed, she became very violent, but again lapsed into a morose and sullen mood; she is at times rational, but only for a short time. This patient has led a dual life; to her family and friends, she has been a respectable, well-behaved woman, though a divorcee; among those, however, who knew her better, she was believed to lead a life more agreeable than moral. Eight years ago she was, while

working as a clerk in a store, married to a man whom she left almost immediately, and who secured a divorce from her after two years. Since her marriage she has led a precarious existence. About a year ago she received a legacy from a relative, which, at his earnest request, she placed in the hands of a brilliant young financier, with whom she had interesting relations. A month before her illness began, this young man told her he had lost her money, and at the same time transferred his attentions to her friend and companion. The loss of her money and the desertion of her lover upset her so as to bring about the illness which brought her to the institution. The morning after admission she refused to get up, and would not talk. Pulse, 96; temperature, 99°; tongue swollen and coated, and marked by the teeth; pupils widely dilated, and eyeballs fixed; right pupil reacts to light, left does not; skin hot and moist and face flushed. The next day there was anæsthesia over whole surface of body, there being no indication of sensation anywhere except when conjunctiva was touched. By the next day the anæsthesia had disappeared; she brightened up and became hilarious and loquacious. The next day she was cataleptic, showing no sign of consciousness. Respiration and pulse normal, skin moist and warm. Next day cataleptoid condition still present and more pronounced. Her arms and legs will stay in any position they are placed. Since her admission she had slept well and taken a glass of milk every two hours. Two days afterward the cataleptoid condition disappeared; she still refuses to talk, however, and answers all questions in an absurd and irrelevant manner. During the next week she was very hysterical, laughing, talking and acting in the most extravagant manner; she is very self-conscious. During the next two weeks she became quite rational, though easily disturbed. At the end of this time she again became hysterical, and her excitement increased until it became maniacal; she was profane and lascivious, also destructive. This condition continued for a month with varying degrees of violence; during this time she talked almost incessantly when awake, seemingly living over in a disjointed way her past experiences. She was then quiet for a week, her excitement returning at the end of a week in conjunction with the advent of a menstrual period. During the next month she became more and more excited, and finally belligerent and destructive. When by herself, especially at night, she would pass into a hysterical delirium, in which she would live over different phases of her life, the different episodes

replacing each other more or less rapidly, like pictures in a panorama. She came out of this condition in about ten days, and became very noisy, obscene and profane; she continued in this condition with varying degrees of violence for three months, after which she gradually quieted down, and became quite rational. She was transferred to Norristown in March, 1890, and after a two-months residence there went home well, and has remained so since. This was a very interesting case, both on account of the violence of the excitement and the peculiar delirium, and the consciousness of and purposive character of her exaggerated actions, which were apparently inspired by a recklessness born of lost self-control.

The next case, a male, is one due to similar causes, and running almost an identical course.

Mr. C., admitted as a patient September 14, 1889, with the following history: Is twenty years old; family history good. Two years ago, while in Boston, he fell in with a young woman, whom he kept as a mistress. He became a perfect slave to her, and under her influence stole some money. He was discovered, tried and sentenced to six months in a reformatory. In the spring of 1889 he had pneumonia, since which time symptoms of mental trouble have been gradually making their appearance. He is at all times careless, reckless, and thoughtless, also mischievous and destructive. He finally broke out in an attack of violence in the street, and was sent to the insane department of Philadelphia Hospital. At the end of two weeks he was discharged apparently restored. Three days afterward he was brought to this institution, having broken out into another attack of excitement. On admission he was very quiet and well behaved. His manner was hysterical and his conversation irrational and generally absurd. On being put to bed he lapsed into delirium, talking continually and tearing his bedclothing. The delirium would cease and he would become quiet if spoken to, and he would remain quiet as long as anyone was in the room, but as soon as he was left alone the delirium returned. The same physical conditions were present as in the other two cases. Skin warm and moist, pulse full and soft, pupils widely dilated, and expression mobile. He quieted down soon after admission and convalesced so rapidly that he was removed by his friends at the end of a month, apparently restored. Four days afterward, however, he was returned to the institution, having again become disturbed mentally. During the next

two months he remained in a condition of general exaltation during the day and of wandering delirium during the night. He was noisy during the day and sometimes destructive; at night his condition was peculiar. It is noted, soon after his return to the institution, that he is in a delirium at night with illusions as to his surroundings. This condition seems to make its appearance as soon as he goes to bed, he passing, as soon as the house gets quiet, from a condition of mild exaltation to one of delirium. He strips all clothing off, rolls about on the floor or bed, or climbs up on window sill, or headboard of bed, performing all sorts of antics. A word of command will bring him down, and he will get quietly down and into bed, where he will stay until he is left alone again, when he goes on as before. His body is covered with perspiration, skin hot, pupils dilated, eyes fixed and expression that of complete self-absorption. During the next two months his condition improved somewhat. He slept better and was not so noisy during the day. He gradually improved, but became mentally and physically indolent, so that he had to be compelled to take exercise. He was very selfish and self-conscious, and although his improvement became more marked, he seemed satisfied with his life. During the early summer he brightened up and became restive, but his will remained weak and he was almost childish in his selfishness and determination to utilize everything and everyone who came in his way for his personal gratification and enjoyment. He was finally discharged as restored, July 24, 1890. During the last four months of his residence in the institution, this man seemed to suffer from inertia more than anything else. He did not care to make any effort, either mental or physical. He was intensely selfish and mean, almost brutal in his want of consideration for others. This was the exact opposite of what his character had been before his illness.

The next case illustrates the influence of bad training on a neurotic heredity.

Miss W., æt. twenty-seven years, was admitted as a patient November 2, 1889. She is single and a teacher by occupation. Her father is dead, her mother living. Her relatives on both sides are reputed eccentric and her father and mother spoken of as queer. She has not been well since the advent of puberty, and has suffered for a long time from a retroverted uterus with dysmenorrhœa and nervous dyspepsia; she has always been imperious and self-willed and her peculiarities have been humored; she has always been

despondent, and averse to society and to active exercise; she has been a hard student and is very romantic. Her health has been failing for some time, and recently she was sent to a sanitarium for treatment. A week before her admission to this institution she began to have illusions and hallucinations; finally she became manical and violent. She is noted as tall, slight, with large, dark brown eyes and hair; pupils widely dilated, sclerotic, brilliant; expression mobile; skin hot and moist; pulse soft and full, rate, 90°. She is very much emaciated, and there is abdominal pulsation, irregular anæsthesia on right side and general hyperæsthesia. She was very much exhausted on admission, but persisted in rolling around on the floor and tumbling off the bed. During the first two weeks she was in a condition of great exaltation, with illusions and hallucinations. During this time it was difficult to get her to take food, which she refused out of pure caprice. During the night she would lapse into that form of delirium which I have described as characteristic of these cases, and she did not get much sleep. At the end of this time she had quieted down somewhat and slept much better, she also ate better, but was still capricious; at times she would drink a glass of milk quietly; again she would take it in her mouth and squirt it over the bed, or drink part and throw the rest on the floor or in the nurse's face, or she would try to stuff a whole slice of bread into her mouth at once, at the same time making all sorts of gestures and gyrations. During the next two weeks there was a marked improvement in her physical condition, the tendency to delirium disappeared and she began to eat better. She still kept up, to some extent, her absurd performances while eating. As she became stronger physically she became more capricious, and her conduct resembled that of a spoiled child of six years, in its wilfulness and unreasonableness and the absurdity of the antics she would perform. She spent a great deal of her time either prone on the floor or in an attitude of supplication, and for a week would not speak to anyone. During the next six weeks her physical improvement was steady and marked, but there was little change in her mental condition, except that toward the latter part of the period she became more quiet and orderly. She was still inclined to be histrionic, however, and when she had an audience, never failed to originate some startling performance for their benefit. After this, however, she improved quite rapidly, and in a short time became as quiet and sedate as she had been the opposite. She was discharged restored, March 29, 1890.

The sixth and last case differs from the others in that it was a second attack of insanity, also, in that it terminated in permanent mental reduction, ending in dementia.

B. was admitted as a patient, August 6, 1889, with the following history: Is thirty-four years old, married and has four children. Was born on the Isle of Guernsey. Is a music teacher and composer by occupation, and has always made a comfortable living. Two years ago he had an attack of primary dementia. He recovered from this in about eight months and was well until about two weeks ago, when his conduct became irrational and he became religiously excited. His manner has always been peculiar, and he is easily excited and given to dramatic gestures. A maternal aunt had melancholia and he has a neurotic history on both sides of the house, his family being noted as queer. Previous to first attack he was somewhat dissipated, but has not used liquor since. Since his admission, Mr. B. has been very irrational and peculiar, his conduct is exaggerated and absurd. He is constantly bowing and spreading out his hands, or else he will start to speak, stop suddenly and throw himself into an attitude of attention, pointing his finger at the person to whom he is speaking, he will then bow his head forward until it touches the floor, then suddenly jump up, squat down again, bow his head and spread out his hands in an attitude of submission. During this time he will jerk out an occasional word or sentence which has no significance. He is disinclined to answer questions, but certain words will startle him and he will spring up and cry "stop!" During the first two weeks of his residence in the institution, he alternated between garrulous excitement and stupid quiet, with all sorts of grotesque antics and performances. He slept and ate well, and when alone was always quiet, but began his antics as soon as anyone entered his room, generally starting with a grand salaam. During the next week he improved rapidly, and at the end of that time was quiet and rational, although still very much unstrung and easily disturbed. He was apparently convalescing and continued to improve rapidly. During this time he found a great deal of comfort and enjoyment in playing upon an organ, which had been sent him by his friends. At the end of a month he suddenly began to grow irritable and would become violently angry from trivial causes. It was also noted that he would suddenly stop while playing upon the organ, in the middle of a tune, and lose himself to his surroundings, staring vacantly into space. On being aroused, he would begin to pump

the organ, but forget to touch the keys, or he would begin to play the organ without pumping it. His excitement gradually increased and his conduct became more erratic. He became incapable of a continued conversation on any subject. He also became capricious and histrionic. He would lie down on the floor with his legs up in the air and remain in this position for half an hour at a time, or assume extravagant and ridiculous attitudes in standing or sitting. He runs about the ward making animal-like cries and violent and exaggerated gestures; again, he will mimic the other patients. This patient's antics were peculiar and very interesting to watch. He would be sitting quietly in a chair or singing some imaginary musical score, when he would suddenly fall to the floor and roll over and over from one end of the hall to another, then get on his knees in front of the other patients in turn, his hands clasped and his head bowed in supplication, then he would jump up suddenly, put his hand on the side of his head and run up and down the ward yelling at the top of his voice. This programme was sometimes varied, although the character of the performance was the same. He would occasionally dance a whirlingig, or sing parts of the scores of some of the comic operas. This condition lasted about two months, and during this time there was steady mental reduction. He became in the latter part of October, filthy, profane and lascivious, and from this time on he grew gradually worse. He masturbated almost continually when not watched, and whenever an opportunity offered he would get in front of a window and expose himself. He would eat his fæces, or carry them around in his pocket, and one night, with the contents of his commode, using his finger for a pen, he drew on the wall a musical score, which he composed for the occasion, all the characters were correctly placed and the words written. This performance was all the more remarkable when it is considered that it was done at night, without the aid of a light. There was at no time during his residence in the institution, any failure of memory, and all of his conduct even in its most exaggerated forms, was inspired by his surroundings. When asked to give a reason for his conduct, he would say, "I am in an insane asylum and must act like a crazy man;" or "that his father paid to allow him to do as he did." There were no delusions apparent at any time. He would feign visual hallucinations, but the feigning was easily recognized. In May, 1890, he was transferred to Norristown, where he now is.

I have dwelt at greater length on the history of the progress of these cases than may seem necessary, but I have done so purposely, for in these days of objective pathology, there is a tendency to take too much for granted, or to ignore as irrelevant or of little importance, the subjective phenomena of mental disease; again, there is no class of cases so liable to deceive the general practitioner, and at times even the neurologist, as these subjects of hysterical mania. I have seen one such case within the past year, which was diagnosed as typhomania, and a rapidly fatal issue predicted, that recovered entirely in six weeks; the symptoms on admission and the progress of the case proving it to be one of maniacal hysteria. Another even more marked was sent to us, with the diagnosis of delusional mania, with homicidal and suicidal impulse. This patient was brought tied hand and foot, and guarded by three men. In a week's time he was well enough to have the liberty of the grounds, and was practically well in three weeks. There was a distinct history of hysteria in this case and after admission the patient had two hystero-epileptic convulsions, and was three days cataleptic, but there were no symptoms of true mania, nor were there untoward impulses manifested. The subject of a true mania is indifferent to or unconscious of external impressions in any other than a tactual sense, during the violence of his attack, while in the periods of calm due to exhaustion, they are exaggerated or distorted by his mental confusion. Whereas, the maniacal hysteric, conscious of his surroundings at all times, makes all that comes within reach of his morbid self-consciousness, tributary to his exaggerated egotism, instinctively guiding every act and expression so as to attract attention to himself, and disturb those around him. Another important point in these cases, is the marked disparity between the objective physical condition and the subjective psychical state, and the marked exaggeration of all the mental and motor manifestations, stamp them as clearly as do the labored and grotesque efforts of the amateur actor, his attempted delineation of human passion and feeling.

This is a form of mental disease which will probably never be demonstrated with the scalpel or microscope, but which is, I believe, dependent upon a progressive trophic brain disturbance leading to molecular degenerative changes in the cortex, more or less permanent, and that this disturbance of the nutrition of the brain, acting on an hereditary or acquired psychic mobility, brings about a disturbance of cerebral coördination, characterized by moral perversion, disturbance of the special senses and general nervous erethism, but without intellectual perversion or loss of memory. As seen in two of the cases reported this condition may last long enough to bring about a permanent moral reduction which remains after apparent recovery as a constant menace, in the shape of exaggerated egotism and weakened self-control, rendering the individual liable to a return of the mental disease under the slightest strain, or as in another case it may go on to complete mental reduction, ending in terminal dementia. I believe further, that this is a form of mental disease which is increasing in this country, and that this increase is dependent upon the conditions of modern civilization, which make the disparity between mental strain and general nutrition so marked. These individuals, having for a common characteristic excessive cerebral mobility, either resulting from inherited imperfections of structure, or acquired causes of instability, are constantly affected to an extreme degree by disturbances, which, although trivial in their nature, have an exaggerated effect on their unstable mental equilibrium, making the every day trials and disappointments of life, which are borne by the average individual with equanimity—insupportable calamities, and the excessive emotional activity resulting, produces mental irritation and physical exhaustion, which are extreme, bringing about cerebral incoördination, with the violent emotional and motor disturbances which we see displayed.

REPORT OF A CASE OF ANÆSTHESIA OF
THE RIGHT SIDE, SUCCEEDED BY HYPER-
ÆSTHESIA OF THE SAME SIDE AND PARE-
SIS OF THE LEFT, ASSOCIATED WITH
BALANITIS.¹

By W. H. NOBLE, M.D., PHILADELPHIA.

THE fact that alarming phenomena sometimes appear as reflex actions from comparatively trivial causes, and that they often occasion the gravest apprehension to the friends of the patient as well as to the medical attendant, leads me to report to you the case of a man twenty-nine years old who came under my observation several years ago, in which the symptoms pointed to serious trouble high in the cord, although later developments led me to modify that view of the case and to entertain the idea that the symptoms were of a reflex character due to prepuccial irritation.

It is with the hope of eliciting some discussion by which I shall gain light on what to me was then and still is more or less of an enigma, that I venture to bring this case to your notice.

Mr. K. had been the subject of several attacks of acute rheumatism, in one or more of which endocarditis had supervened as a complication, and was left with very considerable involvement of his heart ; otherwise his health was fairly good.

Such was the condition of affairs when he ran rapidly across a ten-acre field to intercept his niece, who had started off for a drive in the face of an approaching storm. He failed to stop her, and while walking back to his home felt a numbness extending rapidly over the entire right side, and it was with extreme difficulty that he finally reached the house. Here he grew rapidly worse, soon becoming unconscious.

When I saw him, in about one and a half hours, hyper-æsthesia had succeeded to the anæsthesia of the right side,

¹Read before the Philadelphia Neurological Society, Feb. 23, 1891.

while there was complete paresis of the left side associated with Cheyne-Stokes respiration. The heart's action was extremely weak and irregular and the face pale.

In view of the known condition of his heart, a diagnosis of embolism or possibly hemorrhage high in the cord was made, and a grave prognosis given. Arterial sedatives were administered, and cold applications made to the back of the neck, but no improvement was noticed.

After fifteen hours, finding that the patient had not passed urine, in attempting to catheterize him, I found that he had a very much elongated prepuce, considerably inflamed and swollen, with phimosis. In forcing the fore skin back pus exuded from under it. The stricture was reduced revealing a balanitis. The parts were cleansed and dressed with iodoform and boracic acid. The urine was then drawn, nearly $\frac{3}{4}$ quart being voided.

In about three hours the symptoms began to abate, and in twelve hours the patient recovered consciousness, with a very marked decrease in the hyperæsthesia. He continued to improve and by the end of a week he had almost no hyperæsthesia or paresis, and went on to an uninterrupted and uneventful recovery.

The theory of embolism was based on the probability that vegetations had formed on the valves of the heart as the result of endocarditis and a small piece had been washed off by the accelerated current of the blood due to the violent exercise which he had taken, and had lodged in the cord, causing blood stasis, which in turn, by pressure, affected the left side, producing the paresis present then.

The same theory might apply in the case of hemorrhage, and the possibility of such a collection of blood being rapidly absorbed might still allow that cause to be considered as present in the case had the bladder alone been involved; but having instead a well developed suppurative inflammation at the corona of the penis in conjunction with phimosis, I was led to regard the case as one of a reflex character, especially when the symptoms yielded so promptly when the irritation was relieved.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

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| <i>From the Swedish, Danish, Norwegian
and Finnish:</i>
FREDERICK PETERSON, M.D., New
York. | <i>From the Italian and Spanish:</i>
WILLIAM C. KRAUSS, M.D., Buffalo,
N. Y. |
| <i>From the German:</i>
WILLIAM M. LESZYNSKY, M.D., New
York.
BELL MACDONALD, M.D., New York. | <i>From the Italian and French.</i>
E. P. HURD, M.D., Newburyport,
Mass. |
| <i>From the French:</i>
L. FISKE BRYSON, M.D., New York.
G. M. HAMMOND, M.D., New York. | <i>From the German, Italian, French and
Russian:</i>
F. H. PRITCHARD, M.D.
ALBERT PICK, M.D., Paris, France. |
| <i>From the French, German and Italian:</i>
JOHN WINTERS BRANNAN, M.D., New
York. | <i>From the English and American:</i>
A. FREEMAN, M.D., New York.
<i>From the French and German:</i>
W. F. ROBINSON, M.D., Albany. |

PATHOLOGICAL.

THE THEORY OF MOTOR DISTURBANCES IN TABES.

In the Wiener klin. Wochenschrift, 1890, No. 19, Mader formulates his views in the following propositions:

1. The tabetic ataxia does not depend upon a disturbance either of the motor centres or the motor tracts. It is therefore incorrect to speak of a disturbance of coördination.

2. The tabetic ataxia is due exclusively to an obstruction in the sensory reflex paths, viz.:

- a. The spinal tendon reflexes (exaggerated movements, swinging and stamping gait, uncertainty in grasping, etc.
- b. The conscious sensations of equilibrium, ascending in the posterior columns to the cerebellum (symptoms of vertigo, staggering and reeling gait, Romberg's phenomenon).
- c. Only the manifestations described under *a* are characteristic of tabes.

Other apparent disturbances of motility in tabes, such as the reflex pupillary rigidity; the paresis affecting the bladder, the rectum or the sexual organs, and vaso-motor disturbances seem also to be due to a lesion of sensory reflex paths.

The joint affections in tabes seem mostly to be the result of analgesia in the superficial portion of the joints, so that the twisting and jerks consequent upon the peculiar gait produce an inflammation which is unnoticed by the patient, owing to the loss of sensation.

Indeed genuine motor paralyses also occur in tabes, such as ocular paralyses. On the other hand, paralyses of the lower extremities seem only to arise through an extension of the process to the pyramidal tracts. Finally, the writer takes exception to Jendrassik's view that the causes of the tabetic disturbances of sensibility exist in the cerebral cortex, but believes that the same may be readily accounted for by changes in the sensory paths in the posterior roots, and their spinal prolongations. (*Centralbl. f. klin. Med.*, No. 4, 1891.) W. M. L.

COMPRESSION MYELITIS OCCURRING IN VERTEBRAL CARIES.

In a recent work upon this subject (H. Schmaus, Wiesbaden, J. F. Bergmann, 1890) the author reaches the following conclusions:

1. Apart from the direct bruising of the cord through displacement of the vertebræ, etc., the degeneration of the cord arising in vertebral caries is due to œdema, which, when of long standing, develops into a diffused softening.

2. A true myelitis occurs only in rare cases, through extension inward of the inflammatory process existing in the vertebral column. There arises almost always a pachymeningitis, and often a meningitis.

3. Myelitis may be assumed only when the process existing in the spinal cord shows all of the characteristics of a preceding external inflammation. In tubercular vertebral caries, only when true tuberculosis occurs in the spinal cord.

4. All other incidental processes are due to inflammatory reaction, arising as a result of the softening, which may terminate in sclerosis.

5. The œdema arising in the cord is, in many instances, due to venous obstruction. In others it is an inflammatory œdema. But it is most frequently due to their combination.

6. The collateral œdema is to be ascribed to the effect of ptomaines; an analogous condition may be produced by chemical processes.

7. Anæmic and embolic softening plays no important part in compression myelitis.

8. The appearance of myelitis depends in the first place upon the rapidity of the extension of the process.

9. The myelitis is always preceded by œdema of the cord.

10. The recovery of those cases of vertebral caries in which the spinal cord had been involved may be accounted for by the retrogression of the œdema. (Centralbl. f. Klin. Med., No. 7, 1891.) W. M. L.

THE OBSTETRICAL FORCEPS AS A CAUSE OF IDIOCY.

The "Centralblatt f. Nervenheilk." reports the investigations of Winkler and Ballen on this subject, an account of which appears in the last issue of the "American Journal of Insanity." They were of the opinion that the use of the forceps in delivery was a more frequent cause of idiocy than was commonly supposed. In a post-mortem examination of an idiot, sixty years of age, who had been delivered with forceps, a depression of both parietal bones, corresponding to cerebral lesions, was found. Out of ten subsequent autopsies of idiots one similar condition was found to exist, and out of twenty-five living idiots six were found to have depressions of the skull. B. M.

ERB ON PROGRESSIVE MUSCULAR DYSTROPHY.

(Sammlung Klin. Vorträge, N. F., No. 2.) The position of the writer as to this question, which is now generally recognized, is presented in a manner as clear and convincing as it is attractive. In contrast with the spinal form of progressive muscular atrophy, E. in former years described the juvenile form, in which he included both the so-called pseudo-hypertrophy and the hereditary form of Leyden. The type described by French writers as "Duchenne's infantile muscular atrophy" also belongs to the juvenile form (the disease beginning in the face). Subsequently Erb classified all of these forms under the general name of "Dystrophia Muscularis Progressiva." The following conditions favor their correlation and clinical identity: The similarity of the symptoms; the development and localization of the atrophy and hypertrophy of the muscles; their behavior on inspection and palpation, and upon mechanical and electrical examination; and, further, the transition forms between the several types, as well as the irregular forms.

The fact that one form passes into the other he considers as a further proof of their sameness. The appearance of the various types in the same family is also in support of this view. The description of the symptoms of the disease follows, of which we shall only mention that the trunk and the extremities are especially affected; that the disease usually begins in early childhood or at the age of puberty; that there is a change in the consistency of the muscles upon palpation; that the mechanical, faradic and galvanic excitability is diminished; that no reaction of degeneration exists; and, finally, that fibrillary contractions are almost always absent.

As to the *differential diagnosis*—the dystrophy is distinguished from spinal progressive muscular atrophy by the fact that later in life, without known heredity, the latter extends to the trunk from the distal ends of the extremities, at first only from the upper extremities; that true or false hypertrophy never occurs; that fibrillary contractions and degenerative reactions are always present when the disease is well advanced; and by its frequent combination with chronic progressive bulbar paralysis. The dystrophy may be easily differentiated from syringomyelia, chronic multiple neuritis and progressive neurotic atrophy (Hoffmann). In treating of the pathological anatomy, he points out that the condition of the muscles in the various forms of dystrophy are almost completely identical in all essential points, and that the seeming dissimilarity is due only to the quantitative differences in the several histological changes, and to their varying combinations in different stages, muscles and individuals. Despite the fact that in cases of dystrophy the nervous system has as a rule been found normal, he cannot help suspecting that perhaps a neurotic origin of the disease is to be assumed, in which a coarse change in the trophic centres themselves would not be discoverable microscopically. In this manner nearer conditions of relationship between dystrophy and spinal amyotrophy would nevertheless appear. After briefly touching upon the etiology, course, prognosis and therapy, he concludes by again emphasizing the clinical unity of muscular dystrophy, but recommends that we differentiate three subdivisions of the same—the hypertrophic, the juvenile and the infantile forms. A commendable feature of the lecture is the insertion of typical clinical pictures of the several forms of dystrophy, with illustrations. (Centralbl. f. klin. Med., No. 7, 1891.)

W. M. L.

RAILWAY SPINE.

In a recent meeting of the Vienna Medical Society, Prof. Benedikt presented three cases of this interesting disease.

The first was a laborer who had fallen from a great height, where he was working. He was seized with severe pain in the lower limbs, and remained for three years afterward in a pitiable condition. When seen at the end of this time by the professor, he had, in addition, paralysis of one leg and fearful spinal pain. All therapeutic measures had proved of no avail up to this time. The actual cautery was applied to the spine and a heroic course of iodide of potash ordered. Under this treatment he improved somewhat, and was removed to the hospital, where he was treated by the galvanic current and subcutaneous injections of carbolic acid. After seven weeks of this treatment he was able to leave the hospital, and the treatment was continued in the clinic, with the result of entirely curing the patient a short time after. It is especially important in these cases to know what symptoms may develop after the accident, in order to decide as to whether they are the direct results of the accident or whether their occurrence is simply a coincidence.

The following case is an example of this: A lawyer, some time after an accident, suffered from severe cerebral neurasthenia. Some months later, there appeared contraction of the field of vision, first for colors, then for white, and finally atrophy of the optic nerve.

The second case was that of a conductor who came under Prof. Benedikt's care three years before, directly after he had been through a railroad accident and complaining of vertigo and queer feelings in his head. In spite of this he had done his duty as conductor during these three years. The contraction of the field of vision for colors which had occurred in the lawyer after a few months were just beginning to appear in this latter case after the lapse of three years. In both these cases it was highly probable that the eye affection was due to the shock of the accident, although the time required for development was so different in the two individuals.

The third case presented was especially interesting, on account of the gravity of the symptoms. While traveling two years before, the patient was thrown, by the shock of a collision, over a table. Arriving at his destination, he was able to walk to his home, although troubled with vertigo and headache. After this he was obliged to keep his bed

for several weeks, and obstinate vomiting set in. After this he was able to walk again for a short time. Eight months before he was seen by Prof. Benedikt for the first time and presented the following symptoms:

He stammered like a paralytic, his memory was weak, and his head was affected with queer sensations. He suffered with paresis of the lower extremities, accompanied by exaggerated knee-jerks and well-marked ataxia. The pupils showed normal reaction. Neuroretinitis was present, the perception of color being retained. The paresis, anæsthesia and ataxia were more strongly marked on the left side than on the right. With closed eyes he would fall immediately to the left side. There was well-marked tremor of the left arm. After several weeks' treatment in the hospital he was so far improved that he was discharged and the treatment was continued in the clinic. The paresis of the right leg is removed, the ataxia much improved. The left hemiplegia, headache, weakness of memory, tremor and hemianæsthesia remained, though much improved.

The professor offers the following theory to explain why these cases present such a complete picture of diffuse neuritis. He thinks that the effects of a shock are felt principally in the fibro-cellular tissue in which localized inflammatory processes are set up. Where serious nervous symptoms make their appearance late in the history of these cases, it is because the process, starting in the fibrous tissue has finally involved the nerve elements

W. F. R.

JACKSONIAN EPILEPSY FOLLOWING INFLUENZA.

A. Erlenmeyer reports the following case in the *Berliner klinischer Wochenschrift*, 1890, No. 13. A physician, 25 years old, of previous good health, was taken ill on January 5, 1890, with the typical symptoms of neuro-gastric influenza. Family history negative. The patient complained until the end of January of sleeplessness, headache, pains in the legs, anorexia, constant eructations of gas and constipation. On the first of February, while eating, he noticed a feeling of numbness in the left hand and forearm; this was followed by muscular twitchings in the same region and complete loss of consciousness. After the attack, which lasted from two to three minutes, vomiting set in. Small hemorrhagic spots were seen on various parts of the body, and also minute hemorrhages in both conjunctivæ.

On the 8th of February, a similar attack with strong convulsive movements of the whole left arm, but without loss of consciousness. Duration three minutes. Facial muscles and speech undisturbed. After the attack, vomiting, which was frequently repeated during the next few days. Malaise and disturbed sleep until the 18th, then complete recovery.

Erlenmeyer considers the case one of Jacksonian epilepsy, and believes that the preceding influenza was the chief etiological factor in its causation. He thinks it probable that the convulsions were due to capillary hemorrhages in the cortex similar to those observed in other parts of the body.

FIVE CASES OF LEAD ENCEPHALOPATHY.

These cases were observed by Trimborne in the Kölner Bürgerhospital (Sep. Abdruck, Bonn, 1890; Abstract in Centralbl. f. klin. Med., Jan. 10, 1891). The literature relating to lead encephalopathy is as yet quite limited. The publication of cases well observed, both clinically and pathologically, is therefore always of value. The *first* case belongs to the convulsive class of encephalopathy, and was complicated by pronounced lead paralysis. It is remarkable that in this case the saturnine eclampsia manifested itself as one isolated but severe attack, after which the patient recovered with comparative rapidity, and remained entirely free from similar attacks. The *second* case was a patient who worked for two weeks in a white lead factory and then became ill with symptoms which bore a strong resemblance to those of tubercular meningitis. The *third* case is worthy of note on account of the clearness of the cerebral symptoms, which were unobscured by any other toxic symptoms. After recovery from the cerebral affection, slight attacks of colic occurred. The disease began with coma of several hours' duration, without convulsions, from which the patient awoke with profound mental depression, which persisted for several days, and gradually disappeared with the other cerebral symptoms. The first evening it was interrupted by a condition of intense excitement, with hallucinatory delirium. The *fourth* case presented a pronounced picture of saturnine eclampsia. It proved fatal. The autopsy showed, as in the second case, the absence of lead in the brain, and cerebral anæmia as a prominent feature. After analyzing the results of the autopsies thus far recorded, and the views in regard to the

nature of encephalopathia saturnina, he expresses the opinion that, in certain cases, and especially in those in which no lead is found in the brain, that the cerebral symptoms are secondary phenomena to a condition produced by some toxic action of the poison upon the blood or the kidneys. He looks upon this as a condition similar to uræmia, but not necessarily accompanied by albuminuria or degenerative nephritis. The last case was one of unusual severity. The patient suddenly fell while at work as one struck by apoplexy, and remained in a semi-comatose condition for several days. Fourteen days later he was seized with convulsions, immediately followed by hallucinations and maniacal delirium. After eight days another convulsive attack occurred, followed by profound coma. For six weeks he remained free from cerebral symptoms, when convulsions again occurred, accompanied by coma, which lasted twelve hours. Recovery took place after a protracted convalescence.

W. M. L.

IDIOPATHIC CRAMP OF THE TONGUE.

In the "*Giornale Della R. Accademia di Medicina di Torino*," Vol. LIII., No. 3, Dr. Stefano Personali describes an interesting case of idiopathic cramp of the tongue. The patient, a valet, age 30 years, denied syphilis and alcoholism, and offered no hereditary neuropathy. In his youth he was a masturbator, and contracted gonorrhœa when 15 years old. About one and a half years ago he commenced having cramps in the hypoglossal region, whereby the tongue would be forcibly projected from the mouth. The intensity of the cramps was extraordinary—the tongue would be stretched to its utmost, reduced in its transverse diameter, and twisted on its longitudinal axis. Added to this there was a severe stretching pain in the region of the hyoid bone, uncontrollable yawning, sialorrhœa and polydipsia. No aura preceded the attack, no fibrillation, and the electrical reaction was normal. These cramps occurred fifteen to twenty times daily, and ceased at night. General sensibility and taste unimpaired. The reflexes are somewhat exaggerated, especially the patellar. Sexual, vesical and rectal reflexes intact. The special senses offer nothing abnormal; speech is interrupted during the attacks; otherwise normal; laryngoscopic examination negative, but the mucous membranes are very anæmic. The patient was put on a general tonic treatment, was advised to take a long sea voyage, and after several months was completely cured.

W. C. K.

AN EPIDEMIC OF CHOREA.

Dr. Wichmann (Deutsch Med. Wochenschr., 1890, Nos. 29 and 30) describes an epidemic of chorea which occurred in a school at Wildbad. Eighteen girls in one class were first affected, and later eight boys in the same class. Thirteen of the girls and all of the boys had chorea rythmica; five girls had chorea minor. The girls were affected rapidly one after another, the boys not until the girls were well on toward recovery. In Wichmann's opinion, the epidemic was undoubtedly hysterical in character; its great extent was due to the fact that the sick children were not removed from school at the beginning of their illness. J. W. B.

THERAPEUTICAL.

HYPNOTIC SUGGESTION IN HYSTERIA.

Dr. Berillon, the editor of the "Revue de l'Hypnotisme," in a pamphlet lately issued on the indications for the use of the hypnotic suggestion, offers the following observations on the treatment of the neuroses:

He declares that the suggestion is indicated, both in the treatment of the general condition of hysteria and also to combat the local manifestations, such as hysterical paralyses, contractions, anæsthesia, aphonia, vomiting and the like. Also in the mental troubles of a hysterical nature.

Dr. Berillon is of the opinion that these mental troubles occurring in hysterical subjects have not received the attention from physicians that their importance deserves. These troubles may vary greatly from each other in degree, from simple mental instability, absence of volitionary power, and the spirit of contradiction up to actual delusions and maniacal excitement. Against this sort of "moral ataxia" which shows itself by alternatives of hyperexcitability and depression, it is of no avail to count upon the action of this or that medicine. The remedy itself must be psychical in its nature, and we have it in perfection in the hypnotic suggestion.

Hysterical cases, left to themselves, with no guide but their own disordered minds, inevitably drift further and further from mental equilibrium, whereas if guided by the firm authority of suggestion to resist these morbid impulses which assail them, the result can not but be beneficial. Some recent observations have convinced the doctor that the suggestion is the mental regulator *par excellence*. It may be said that this is simply treating symptoms, but in point of fact, in the majority of cases, this mode of treatment will cause to disappear that train of symptoms which rendered possible the diagnosis hysteria. W. F. R.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of February 10, 1891.

The President, Dr. LANDON CARTER GRAY, in the chair.

THE USE OF ATROPIA IN THE TREATMENT OF LOCALIZED MUSCULAR SPASM.

Dr. W. M. LESZYNSKY read a paper with this title. The speaker had in March, 1884, reported a case of clonic torticollis, successfully treated by the subcutaneous administration of the sulphate of atropine. The first case of the present series was that of a man, thirty-seven years of age, who had, three years previously, muscular spasm, beginning at the right side of the neck, which had come on six weeks after an abscess had been opened at the angle of the jaw on the right side. The force of the spasm was increased by mastication and closure of the jaw, and it was more active upon mental excitement. He was frequently aroused from sleep by the severity of the paroxysm. There was no complaint of pain, but only of numbness in the right lower lip. He was treated by means of medicine and electricity for four months without relief. There was well-pronounced clonico-tonic spasm affecting the right platysma, forcibly drawing downwards the facia about the chin and the lower angles of the mouth. The clonic character of the spasm preponderated, and was almost constant. The muscle was hypertrophied to nearly four times its normal size, and its outline was distinct and well defined.

There was an area of complete anæsthesia one and one-half by three centimetres at the vermilion border of the lower lip near the angle of the mouth on the right side, which extended inward over the mucous membrane and over the alveolar process of the lower jaw. The mechanical irritability of the facial muscles was well marked. The jaw jerk was demonstrable. There was no apparent caries of the teeth. There was no abnormality evident in other portions of the body. The treatment was commenced by the

application of a cantharides plaster over the affected muscle. After one week had elapsed an injection of $\frac{1}{120}$ of a grain of sulphate of atropine was made into the platysma. For the next three days an injection of $\frac{1}{400}$ of a grain was given, when the exaggerated mechanical irritability of the facial muscles had markedly diminished and there was an abatement in the frequency of the spasm. Sensation was also returning in the anæsthetic area. The dose of atropine was gradually increased, until $\frac{1}{4}$ of a grain was given daily. At the end of two weeks the most energetic effort by pressure and otherwise had failed to produce any spasmodic action in the platysma. The administration of the atropine was then discontinued. Report from the patient a month later was that there had been no return of the spasm. The solution used was atropine sulph. gr. 1 to aq. distil. ounce 1. One minim of this solution represented $\frac{1}{40}$ of a grain of atropine. The speaker's method had been to give four minims at the first injection and to be on the alert for constitutional effects. Upon discovering that there was no idiosyncrasy in regard to the drug, it was administered once daily, and the quantity gradually increased from day to day until the desired effect was produced or intolerance was established. The production of severe constitutional symptoms was not an essential feature in this plan of treatment. One of the experimental physiological effects of the drug, when given in sufficient quantity, was to paralyze the motor nerves, first affecting their trunk.

Dr. V. P. GIBNEY, on being asked for his views on the subject of the paper, said he did not know whether the author had included in his earlier reports cases of hysterical torticollis, rotary spasm and so on. He doubted whether it was the intention to include that class of cases known as spastic paraplegias. The cases which came under his personal observation were only those of functional disturbance or deformity.

THE DEGENERATIVE DISEASES OF THE SPINAL CORD, WITH A DESCRIPTION OF A NEW TYPE

Title of paper read by Dr. Dana. See page 205.

Dr. B. SACHS said that at the present time it was difficult to agree or disagree with Dr. Dana. The clinical symptoms in his own and Dr. Putnam's cases had varied from the symptoms ordinarily met with in cases of combined sclerosis, but those who had seen many cases of tabes and of

ataxic paraplegia and of other forms of combined sclerosis would hesitate to create new types on the basis of a slight variation in symptoms. Moreover they now knew, from the investigations of many observers, that the degenerations which occurred in the spinal cord were not strictly symmetrical. These often overlapped the lines which divided the spinal tracts from one another. Cases had been recorded in which the degeneration of the white fibres had also involved the gray matter of the cord. He could not, therefore, see the advantages of creating a special type, because the degeneration in these cases happened to be somewhat differently distributed. He must object also to Dr. Dana's suggestion for the suppression of the term of compression myelitis. No doubt that many years ago the term was loosely applied and in a fair number of cases of compression of the cord the destruction of that organ was not the result of an inflammatory process. It was only within the last few months that Schmaus, in a series of beautiful researches, had demonstrated the extension of the inflammatory process from the bone to the spinal cord itself. In many cases of Pott's disease the symptoms might unhesitatingly be attributed to a true myelitic process.

Dr. G. R. ELLIOTT said that as to the possible pathology of the changes which took place in the spinal cord in the conditions under consideration, there had, he thought, been much useless discussion, as well as to the precise kinds of degeneration and inflammation which attacked nervous tissue. He thought that they might all agree that these changes were reconcilable with those which took place in other organs. In all processes recognized as inflammatory and running a protracted course, there was increase of connective tissue and results incidental to this. Nervous tissue had an intercellular substance the same as any other organ, with the same parenchyma and protoplasmic material, under certain modification. In the acute processes the cells underwent more decidedly rapid changes than was the case in the liver, kidneys, or heart. In the course of acute processes degeneration might or might not occur. Every process, whether degenerative or inflammatory, was, as he had said, followed by the increase of connective tissue, but the mere presence of this tissue in the nerve substance was no proof as to the initial lesion, whether inflammatory, degenerative or septic, or some process of softening, embolism or thrombosis. As to compression myelitis, there was no absolute proof to show that the lesion was inflammatory, and he thought everything pointed to the

contrary. The examinations of the cords in these cases were usually made at a late stage, when the changes found and the increase of connective tissue present had given rise to the idea that the processes had been inflammatory from the beginning. Kohler had, however, demonstrated that similar changes could be brought about by mechanical pressure of the cord. In the majority of cases of compression myelitis following Pott's disease, there was no tendency for the inflammatory processes to attack any part of the cord. The inflammation was limited to a narrow site on the dura mater. It was only where the process was a rapid one and perforation of the dura ensued that leptomeningitis and myelitis was set up.

Dr. W. R. BIRDSALL thought that the position taken by Dr. Dana was correct, for he was not attempting to establish the existence of a new type of disease of the cord, but was merely calling attention to a group of symptoms differing in course from those of ordinary cases of combined sclerosis. In the opinion of the speaker, compression myelitis was not an inflammation of the cord in the majority of cases. He took exception to the view that placed changes in the cord on a par with those of other organs, and did not think they were justified in saying that the inflammatory processes in the cord and general nervous system were the same as those in other parenchymatous organs.

Dr. SACHS said that the remarks he had made in regard to compression myelitis appeared to have been misinterpreted. He was well aware that the term had often been misapplied, but the point he wished to make was, that in view of the very latest investigations, there was every reason to believe that a true myelitic process was responsible for the symptoms in a number of the compression cases, particularly in those in which a tuberculous process in the bone had been the starting point of the whole trouble.

Dr. HERTER had, in Pott's disease, seen direct extension of the inflammatory process from the dura mater to the cord, though in the majority of the cases examined post mortem, were seen at a time when changes in the cord were purely of a degenerative character and the inflammatory site was not to be seen.

The PRESIDENT said that it seemed to him that Dr. Dana had made a very useful contribution to the subject. Of course the paper was not tentative, drawing attention to what the author and others had observed. All this part of the spinal cord was a mysterious area, both clinically and pathologically. The author of the paper was perfectly

warranted in throwing any possible light upon the subject, and in offering any suggestion based upon observation for the grouping of the pathological conditions and clinical symptoms in this part of the cord.

Dr. DANA thought that pathologists generally at the present time would agree with his views as to inflammation. Occasionally it arose from causes other than microscopic poisons, but there was usually some pyogenic germ as the starting point of these inflammations. If it was not possible to get any history pointing to the possible entrance of these, he believed it better to withhold any opinion as to the inflammatory or non-inflammatory nature of the lesion. Dr. Sach's suggestion that there might be tuberculosis of the cord at this level in some of these cases might be true, but in the great majority of the cases tuberculous meningitis would not end in sclerosis, but would probably destroy the cord by softening. He agreed that it was well to be cautious in making new types of disease; still such conditions as Putnam had described were locomotor ataxias or ataxic paraplegias; the prognosis and treatment were different. Prevention or early recognition were important. The conditions seemed to depend upon some toxic influence. In pernicious anæmia, the cord might take on degenerative changes, therefore great attention was necessary to the blood. Recognition of a type in disease was certainly of importance clinically.

Asylum Notes.

REPORT OF THE MICHIGAN ASYLUM FOR THE INSANE, 1890.

THE EVOLUTION OF AN ASYLUM.

BY WILLIAM D. GRANGER, M.D.

This is the time of year for the appearance of asylum reports. That of the asylum at Kalamazoo is one of great interest and instruction.

The growth and changes in the institution since its opening in 1859, are clearly told by Dr. Palmer, the Superintendent, and the text is fittingly illustrated by ten excellent full page photographs.

The main asylum is situated upon a fine farm, about a mile from the station at Kalamazoo ; itself a small western city. The first building erected is described as a type of asylums as built in 1850, or thereabouts. There is a centre with wings and repeated wards, all practically alike, and the necessary adjuncts. Its capacity was 350 patients. It was thirteen years in building. There were four hundred insane in the State when the building was begun. Therefore, when finished it could not receive the original insane, much less the increase. A second building was soon erected, much like the first. One was used for men the other for women. Detached buildings and hospitals were erected in close proximity or attached to the original buildings. All this extension did not keep pace with the demands for asylum care. Two asylums have been built in different parts of the State, and the parent asylum at Kalamazoo given a district only.

But the demand from this district was always greater than the capacity of the asylum. At this point comes in the interesting feature of the report. How was this surplus to be provided for. Brick and stone are of necessity slow in building and expensive as well. Do all the insane need such costly and substantial quarters? Can not many be quickly provided for much more cheaply and in more home-like surroundings than those provided in the old-fashioned closed asylums? This problem seems to be well solved, these questions answered in the affirmative by Dr. Palmer and his board of managers.

The first step was made in 1883. The Porter's Lodge was fitted up for five patients and an attendant. All the facilities for housekeeping are provided. There is a sitting-room, a dining-room, a kitchen, pantry and bed-rooms. The patients assist in cooking, washing, bed-making and the family work.

Later "Brook Farm," of 276 acres, was purchased. The farm house was fitted up for 8 patients. A house was erected for 40 patients, and a large barn for 80 cows. Two full page photographs are given, one of the house alone and one that takes in the house, the barn, and the surrounding acres. Nothing suggests an asylum. The large, home-like house, with a grove of splendid trees just to the north, two or three large shade trees in front, the lawn and well-kept gardens, the big barn opposite, the distant view of miles of prairie, and other farms and farm houses, gives a most delightful impression.

This is the milk farm for the asylum. The house is occupied by a few old men, some convalescents and by able-bodied workers. The life there is made very homelike. There is the sitting and dining rooms, the kitchen, the pantries, etc., and the bedrooms.

Owing to the success of Brook Farm, the present colony system at Kalamazoo arose. The authorities desired to purchase 600 acres and there found a large colony for men and women. But the higher State authorities withheld full consent, and but 320 acres were secured. From a fine oak wood of 40 acres it is called "Fair Oaks." It also borders upon a lake and is about three miles from the parent asylum.

First, the farmhouse was fitted up for 20 men patients and is occupied by about the same class as is the cottage at "Brook Farm."

In 1887 the Van Deusen Cottage was begun and is now completed. It is, as pictured, a very pleasant home, with nothing to suggest its special use of caring for the insane. It is occupied by about 50 women. The cooking and house-keeping is largely done by the patients. The building is of brick, and surrounded by a large, pleasant piazza. One photograph takes in the piazza part only, but includes the lawn and lake beyond, and is charming in its sense of comfort and repose.

Palmer Cottage, for 80 women, was completed in 1889, and, as shown by photographs, is no less attractive than are the other dwellings. Here also are provided "All the Comforts of Home." Two hundred patients are housed in these six different buildings. They are not grouped, but are on three separate farms, several miles apart. The cost so far has been about \$300 a bed. The buildings are well constructed, and heating, ventilation, plumbing and drainage are evidently done with care. The cost of the original buildings are about \$1,000 a bed.

Of course the different colonies are under careful supervisors and central control. The advantages of the system are many and obvious. Critics can easily find fault, while the friendly reviewer can but praise the good work already done and be hopeful for the future.

For the first time, says Dr. Palmer in his report, has the asylum been able to receive all that come for treatment, but only by the quick building of these cottages. How far can the system be extended. The main building, with a capacity for 700 patients, gives security for restraint, while the two hospitals give care for the sick. It must be

remembered the telephone brings into close connection the different parts with the centre. With the growth of the colony will come a more and more perfected system to meet the new additions, and a part of the medical staff can be transferred to the colony.

The asylum authorities are desirous of extending the colony. They ask for 300 acres more, \$25,000 to build two new buildings at Fair Oaks, and \$5,000 for a physician's house there. On the other hand, the State Board of Charities object to the purchase of more land, and say, "The colony policy, while adopted and working well up to the present time, must have a limit." No reasons are given for their decision. The objection is barren except as authority and check. They do approve, however, of the appropriation of \$25,000 for two new buildings at Fair Oaks, and for the physician's house.

What we have described at Kalamazoo is almost unique. It must not be confounded with the system at work at Kankakee or Toledo. Its foundation principle is entirely distinct from that of these two asylums. Nor with the new asylums of Indiana. While the cottages in these plan for cooking and housekeeping to a greater or less extent in each, they are in no sense colonies, but are closely contiguous to the central administration building.

Gheel in Belgium is called a colony, but its plan is entirely distinct from Kalamazoo. At Gheel there are 1700 insane. There is a closed asylum for but 80 patients. The rest live either in the immediate village or the surrounding country. They are housed in the dwellings of the district. The system is the growth of twelve centuries. Besides, they twice select their cases. Patients cannot be sent to Gheel or retained there "who require continuous restraint, or who are suicidal, homicidal or incendiary. Who would be liable to frequent attempts to escape, or whose disease is of such a nature as to disturb the tranquility of the community or offend public decency." (Report of George T. Tuttle, M.D., 1891). The colony systems at Kalamazoo and Gheel have so little in common as to offer nothing but diverse comparison.

The novel movement at Kalamazoo will command widespread interest, its enlarged success hoped for, and failure under the present management not to be feared.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

ASSOCIATION NEUROSES: A STUDY OF THE
PATHOLOGY OF HYSTERICAL JOINT AFFEC-
TIONS, NEURASTHENIA AND ALLIED FORMS
OF NEURO-MIMESIS.¹

BY MORTON PRINCE, M.D.,

Physician for Nervous Diseases, Boston City Hospital, O. P. D.

EVERY practitioner is familiar with a class of nervous affections, commonly known as neuro-mimesis, typified, when occurring as local disease, by so-called hysterical joints, and, when occurring as a more general neurosis, by certain forms of neurasthenia and hysteria. Both types frequently follow traumatism or some acute disease. The different forms which the affection may take are numerous, and, though generally characterized as hysterical, should be distinguished from the classical types of that protean disease. They, as a rule, resemble in the grouping of their symptoms other diseases which are essentially organic. For example: hysterical joints imitate very closely true joint lesions; neuroses of the stomach simulate true dyspepsia or gastritis; localized pain and tenderness resemble the same symptoms due to sprained ligaments and muscles; hypochondriasis, true neurasthenia; neuralgic pain, true neuritis or neuralgia; painful crises, true spinal disease, and so on. As one of the most sharply defined of

¹ Read before the Medico-Psychological Society (Boston), December 18th, 1890.

these symptom-groups is that of hysterical joints, and one which is best known. I have chosen this in illustration of the points I wish to bring out. It is a very common affection. Brodie, who should have the credit of first describing it, says:

"I do not hesitate to declare that among the higher classes of society, at least four-fifths of the female patients who are commonly supposed to labor under disease of the joints labor under hysteria, and nothing else." While Brodie tended to exaggeration in placing the proportion as high as four-fifths, and was in error in limiting the disease to the higher classes, the general truth of this statement will be substantiated by all surgeons, as it has been by Esmarch, Paget, Skey and Shaffer. The affection is just as common among the poor as the rich.

There is no symptom present in true joint disease that may not be present in this spurious affection: pain, limitation of motion, shortening, swelling, atrophy of muscles, contractures, and, if in the leg, limping. The combination of all these symptoms, however, is seen only in the severer types. The more usual form is represented simply by local pain and tenderness, with the consequent inability to use freely the affected arm or leg; very little, if any, local deformity is then present. Such an affection is commonly called an hysterical joint; but I may call your attention to what is apt to be overlooked—that calling such affections hysterical is not an explanation, and in no way adds to our knowledge of their pathology. At most it is merely saying what they are not, *i. e.*, that they are not due to organic causes.

There is no objection to the use of the term hysterical if one insists on retaining it as a generic term to include various but distinct functional neuroses; but it has its objections, since the word connotes so much, and is associated with such varied pathological processes that it tends to obscure our understanding of them and to prevent our obtaining an insight into their true nature. Hysteria, as at present used, embraces a large number of types of functional affections, which vary greatly among themselves and

essentially differ in their nature, pathogenesis, symptom-pictures and course. It is important that these differences should be recognized and the different types classified according to their pathology. After this has been done it will be found that hysteria can be retained only as a generic term, like the word functional, or else must arbitrarily be limited to a single type of such diseases.

Now, that theory of the pathology of affections of this kind to which I wish to ask your consideration is based upon the psychological law of the association of mental processes. This law may be stated in general terms as follows: Ideas, sensations, emotions and volitions occurring together tend by constant repetition to become so strongly associated that the presence of one of them reproduces the others. This law is so well known that it is hardly necessary for me to dwell upon it before this Society. But it has not been made use of to the extent that it might in the elucidation of the symptomatology of disease. If this law is true of normal sensations and ideas, it must be true as well of sensations of pain, of nausea, of vertigo and similar morbid phenomena. But more than this, one at first sight would naturally infer that if it is true of mental states and their underlying brain processes, it is presumably true of pure physiological activities such as are represented in the spinal cord and the lower nervous centres. Inasmuch as all nervous processes are fundamentally alike in their nature, it is to be presumed that if brain processes, with their correlated mental states, can be welded together into an automatic mechanism, it is similarly true that the pure physical activities of the spinal cord, although not correlated with subjective states, may also be welded together by association in the same manner; and that this is true whether these neural activities are simply physiological and normal or pathological in their nature. This is the thesis which I hope to establish, and I believe that with this law so extended, we shall find that many so-called hysterical affections, many neuroses and psychoses, which otherwise are unintelligible, may be readily explained. They may be termed *association neuroses and psychoses*.

ASSOCIATION OF MENTAL STATES WITH NORMAL
PHYSIOLOGICAL PROCESSES.

It is a well-known fact that not only may two mental states be associated together, but a mental state and a purely physiological function. For example: increased action of the heart may be associated with various emotions; flow of saliva or gastric juice with the visual picture or memory of certain foods; diminution of saliva with the emotion of fear; spasm of the bladder with the occurrence of various periodic habits of life, and so on.

A neurasthenic patient of mine, who has had several children, but now past the age of child-bearing, tells me that she never hears a child cry without having a feeling of swelling or fullness in her breasts as if the milk was running into them. This feeling is the same she always had when she was nursing her children. On a late occasion, when she was taking care of a friend after confinement, this feeling was so strongly excited by the crying of the child that at the end of a week her breasts ached as of old. The pain persisted for a whole week during which she was in attendance.

ASSOCIATION OF MENTAL STATE WITH PATHOLOGICAL
PHYSIOLOGICAL PROCESSES.

The act of blushing may be so strongly associated with a single idea, that whenever the idea is present the individual by no effort of will can help blushing. Indeed, this may be carried so far that blushing may become almost a pathological phenomenon, to the annoyance of the unfortunate victim of the habit; and when this act is strongly connected with a particular idea or set of ideas, we may fairly say that we have the first rudimentary association of a normal mental state with a pathological physiological condition. A more marked example of this association may be seen in sea-sickness. I have known a person to be so affected by the motion of the sea that merely looking at the water while standing on dry land has caused severe

pain in the eyes and forehead and vertigo. Actual sailing always produced the same sensations, which were described as being much worse than the classical nausea which always followed them. Again, vomiting is certainly a pathological condition; and yet I know of a young woman who was so unfortunate that the act of kissing was always followed by uncontrollable vomiting. On one occasion the result was particularly embarrassing, it being the moment when she consented to give up her state of single blessedness, and was obliged to leave her accepted fiancé standing in the middle of the room while she hurried off to avoid what would have been a mortifying accident. In each of these instances we have a normal mental state associated with a pathological one, and in the action of kissing, a not at all unpleasant one associated with a very disagreeable function. The mechanism by which these associations and resulting pathological conditions were brought about is easy to understand. In the case of the person in whom severe frontal pain and vertigo were provoked by the sight of the sea, the association of the two mental states—the *visual* picture and the sensation of *pain*, etc.,—is plainly to be found in the past experience of the subject, who had many times had the same sensations produced by the actual *motion* of the sea. By this means the *visual image* of the water, although not the primary cause but an associated idea, had become so firmly bound with the sensation of vertigo and pain, that when the former was present the latter was necessarily reproduced. One cannot here doubt the efficacy of the law of association of ideas to account for the whole pathological process. But in this case the excitant of what is now only the consequence of the association of two mental states was originally an *external* agency, viz., the actual motion of the ship. The impression made by this upon the nervous system was so deep that afterward the presence alone of an associated idea—the visual picture of the water—was sufficient to arouse the other elements of the pathological process. This is a point which I wish to emphasize and make use of later on when we come to study more complex conditions, viz., *that a pathological process*

in the nervous system, once engendered by an external agency, may afterwards be awakened, on the cessation of that agency, by means merely of a physiological action or a psychological state previously associated with it.

The original cause of such pathological processes is not always easy to determine, but that it may sometimes have its origin in the revival of past experiences (*i. e.*, pure mental states) may be seen by the following incident: A young physician, in whose family had occurred an appalling epidemic of diphtheria, resulting fatally to one of its members, found himself shortly afterward near the diphtheritic wards in one of our large hospitals. Owing to the publicity which had been given to the epidemic in his family, he was urged very strongly by the physicians and attendants not to enter the wards. But desiring to see one of the patients, and feeling that as a member of the profession *noblesse oblige*, he persisted in going in. It is probable that, as so much was made of the matter, a profound impression was made upon his mind. Shortly after leaving the ward he was taken with a severe pain in his throat, which was strongly increased by swallowing. The pain and local sensations in every way simulated that of tonsillitis. Now, the subject of this was absolutely convinced that his pain was entirely subjective or hysterical, and could not possibly be due to local causes, and he endeavored to control it by an act of will. But no mental effort made the slightest impression upon the local symptoms, which were as accentuated as if due to inflammation. It was only by persistent effort directed toward absorption of his mind on professional duties that he was able to free himself from them. In this case we must assume that the experiences of a past sore throat were revived by the visual image, etc., of the diphtheritic throat, and having been once revived, no mental effort could control it; or, putting this into physiological language, we may say the sensory centres of the pharynx were reflexly excited from the visual centres, and, owing to the profound mental impression created, continued thus to be excited as a pure association neurosis.

This association of a mental state with a pathological process is frequently seen following a traumatism, where the revived idea of the accident awakens one or more symptoms which originally formed part of a psychosis long since subsided. For example: A patient of mine, who suffered from nausea, vomiting, headache and dizziness, following a shock in a railway accident, suffered from these same symptoms for several months afterward whenever he rode in the cars, although between times he was practically free from them. He has since recovered.

The following is an example of the association of two pure *psychical* states following traumatism: A friend of mine, at present in absolutely good health, was knocked down, some years ago, in the streets of New York by a coach drawn by four horses. The accident was unusually startling, the coach coming upon him unawares, so that he was knocked down without warning. Almost the first thing he was conscious of, beyond the nervous shock, was the fact that he was lying on the ground, while over and above him, as he looked up, was the white belly of a horse. To-day, if this person is suddenly startled by any noise, he tells me that he sees before him as a vivid mental picture the white belly of a horse. Here is an association of the mental state of fear and a visual image.

I know of no more beautiful illustration of the association of a single *mental state with a pure physical* process than that furnished by a case of Dr. Mackensie, of Baltimore. It was that of a lady who had been for years a terrible sufferer from rose cold, or hay fever. The disease became aggravated by the addition of asthmatic attacks which complicated the coryza. She had become so sensitive that the number of exciting causes of an attack was very large. She was so sensitive to roses that the mere presence of a rose in the same room was sufficient to induce an attack. Suspecting the nature of her trouble, Mackensie obtained an artificial rose of such exquisite workmanship that it presented a perfect counterfeit of the original. One day, when the lady came to his office, after assuring himself by careful examination that she was perfectly free from coryza,

Mackensie produced the artificial rose from behind a screen where it had been concealed, and held it in front of her. Almost immediately a violent attack of coryza developed. Her eyes became suffused with tears, the conjunctivæ injected, the puncta lachryma began to itch violently; her face became flushed, the nasal passages obstructed, her voice hoarse and nasal; she complained of a desire to sneeze and tickling and intense itching in the back of the throat and in the auditory meatus; there was also photophobia and secretion of fluid from the nasal passages; to this was added a feeling of oppression in the chest and a slight embarrassment of respiration. Examination showed the nostrils almost completely obstructed by swollen, reddened and irritable turbinated structures and filled with fluid. The mucous membrane of the throat was injected. At this point Mackensie stopped the experiment, thinking it had gone far enough, and the patient left the office with a severe attack of coryza.

The sequel is equally interesting. The true nature of the rose was shown to the patient, with the result that on her next visit she plunged her face into a bunch of real roses without ill effect.²

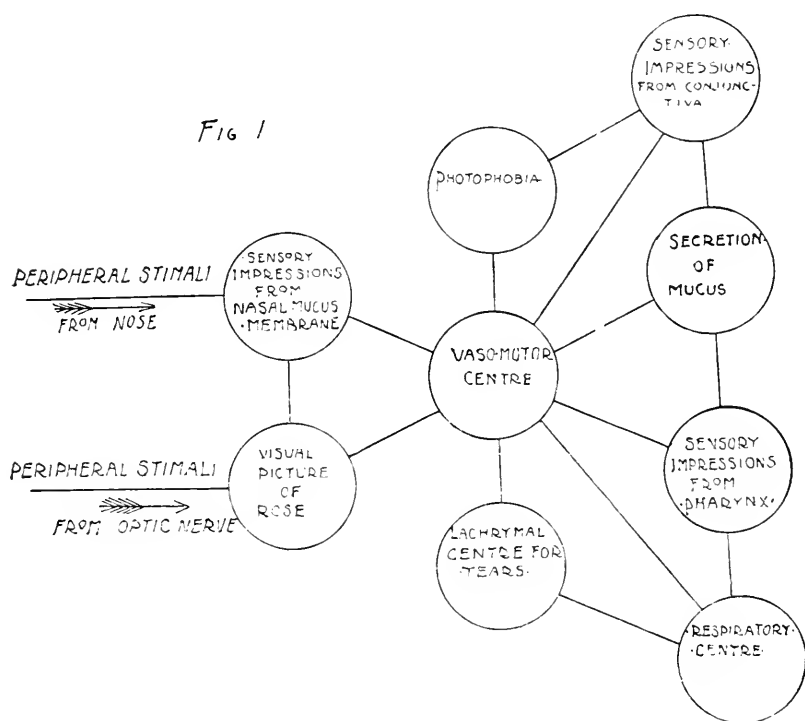
I know nothing more instructive than this case. We have all the phenomena of inflammation, a series of apparently organic processes set into activity by the force of an associated idea. It would seem as if the physiological processes of secretion of tears, secretion of mucus, vasomotor action (causing injection of tissue), pain, etc., were united into an automatic mechanism, and the whole connected (associated), as with a spring with a higher visual centre, which when touched set off the whole mechanism. The principle here involved is an important one, and it will be well to bear it in mind when we come to consider other complex associations. It shows conclusively the possibility of an automatic nervous process of considerable complexity becoming established, and afterward excited

² Am. Jour. Med. Sciences, vol. xci., p. 45, 1886. The reader is referred to this interesting paper for accounts of numerous cases of neuroses of various kinds associated with a fixed idea.

anew as an independent neurosis by a purely physiological stimulus.

I have myself seen a young woman who has suffered from frequent attacks of nervous coryza and sore throat; but although the nervous origin has been apparent, the automatic mechanism is not so sharply associated with a single idea as in Mackenzie's case.

The whole process in this case may be diagrammatically as follows :

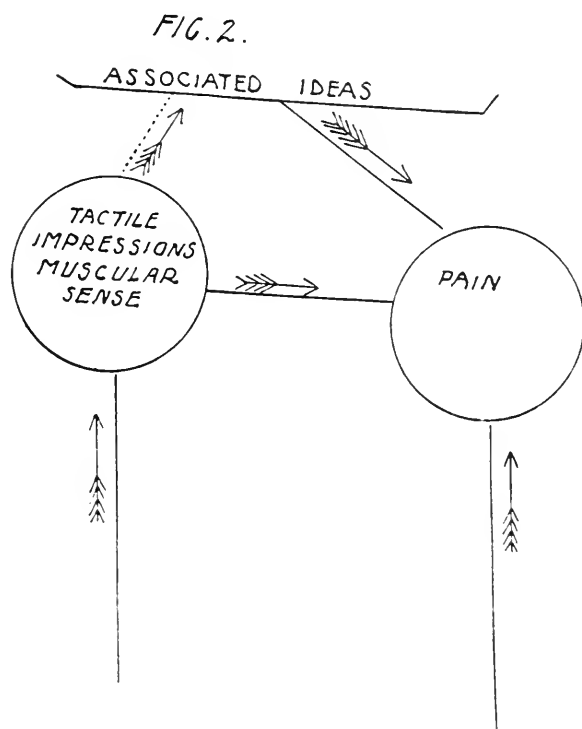


Originally the peripheral stimuli which created the neurosis came from the nasal mucous membrane. Afterwards when the different centres had become welded together into an automatic whole, the entire process was exploded by the visual impressions from the optic nerve stimulating one of the associated centres.

HYSTERICAL JOINTS.

I think I have given enough to show that a pathological process may be the expression of an association of mental states or of physiological activities, or the combination of both, although the examples cited have been drawn from very simple, perhaps rudimentary forms of neuroses; but I wished to illustrate the principles of the law by the simpler examples before applying it to those in which the conditions are more complex. Let us now return to hysterical joints, which we selected as an illustration of a well-known type. I will cite the following simple case, which probably every one can duplicate in his own experience. A strong, vigorous man meets with an accident causing more or less injury to the knee joint. Motion and any use of the leg of course causes pain and makes locomotion impossible. He is confined to his house or his bed, takes care of his knee nurses it, bandages it, applies the usual remedies, and treats it, under the advice of his physician *secundem artem*. The injury at the outset was only a slight one and, yet at the end of six or eight weeks he is still disabled. He comes to you for examination, and after carefully inspecting the leg you are unable to detect any local deformity; but he complains of pain on walking, he limps, and you find some tenderness on pressure about the joint and pain located here or there on passive motion; but you find no local objective signs to account for his condition. Such a case I saw the other day. I was satisfied that the disability was entirely subjective, hysterical if you please, and to be explained as an association neurosis. I found also, what is very common with such patients, a mental timidity about using the leg for fear of aggravating the mischief. I told him to throw away his cane, to walk without limping and disregard his leg, assuring him at the same time that his knee was well, and only required use for the pain to disappear. This advice was followed by a prompt recovery. The mechanism of the neurosis in this case I conceive to be as follows: a bona fide lesion about the knee is produced. At every attempt to use the limb, every time the knee is bent pain is felt in the joint;

in consequence of this the sensory centres, stimulated by the centripetal impressions due to bending the knee, are firmly associated with the sensory centres of pain excited by the same act. Later the local lesion entirely disappears, but the two central sensory processes remain so firmly associated that the mere act of bending the knee awakens both processes—the pathological one of pain as well as the physiological one of sense of movement. This may be diagrammatically represented as follows, Fig. 2 :



At first the centres of pain are excited directly by the peripheral stimuli from the joint ; later indirectly from the associated centre of muscular sense, etc., as indicated by the arrows.

I have no doubt that in most of these cases the sensory centres in the central nervous organ are maintained in this condition of association, by an auto-stimulation dependent on the condition of mind of the subject, which is generally that of anxiety regarding the future of the injury.

But leaving this point for the present and passing on to the study of more complex conditions, I will cite in illustration the case of a little girl who was brought to me for trouble in her leg. On examination I found that not only was there pain on motion in the knee-joint, but there was also marked contracture of the ham-string muscles, so that when the patient attempted to walk, the heel was drawn up, and the weight of the body was for the most part supported on the ball of the foot. There was also decided atrophy of the muscles of the calf and thigh. The electrical reactions, however, were normal. Repeated examinations by Drs. Burrell and Cushing, as well as by myself, failed to detect evidence of organic disease of either the knee or the hip joint. In Dr. Burrell's report I find it stated, "the length of limbs are the same, although the right leg is apparently 1-4 inch longer than left; limitation of motion in the right hip; right leg in position of extreme rotation; slight abduction and slight flexion of the knee (at this time flexion had diminished decidedly owing to treatment)." "No heat or tenderness about either knee or hip joint; left side of pelvis rotated forward toward the left, right scapula held higher than left, apparent lordosis. Diagnosis—Neuro-mimesis, atrophy from disuse." There was in this case a history of traumatism. Some six or seven months previously a schoolmate pulled the girl off her seat at school, and she fell to the ground with her leg crossed under her. She sprained her knee, and, according to her mother's statement, she complained of pain in the joint for some days after. Her mother thinks there was a little puffiness about the knee at the time, and asserts that the girl soon began to limp, that the leg was in a constant state of slight flexion, and that it was difficult to straighten it. This limping and bending of the leg had increased up to the time she came under my observation.

Under treatment which consisted principally of electricity and moral encouragement to use the leg regardless of pain, and especially to extend it, the girl improved in the course of a month or so. She was soon able to walk with the heel on the ground, and had no pain except when attempts were made to extend the leg passively, and was encouraged to believe that recovery would soon take place. She was then lost sight of for nearly a year. At the end of this time she presented herself again for examination. She was then found to be in practically the same condition as she was when last seen, no further improvement having taken place. The difference in size, however, of the two legs was more marked, and it was found to be impossible to straighten the leg. One day while examining her it was noticed that when she was told to make a strong effort to kick with the disabled leg, although she appeared to do so with considerable force, yet the patella and its tendons did not rise up in relief as did those of the other knee, and that when extension reached a certain point, namely, that corresponding to the position in which the leg was habitually held, the extensor muscles on the front of the thigh ceased to contract, and instead of becoming hard to the touch, like that of the sound limb, remained soft. At the same instant the hamstring tendons stood out in strong relief from contracture of these muscles. In other words, at first sight, there seemed to be simultaneous with the contracture a paralysis of the extensor muscles. But a simple test showed that there was no real paralysis, for when she was told to raise and lower herself on one leg, or to step on a chair she was able to do so with ease. The only explanation, then, of this phenomenon was a sudden *inhibition* of control of the extensor muscles at the same instant that the *contracture* of the flexor muscles took place. Another element was thus added to the symptomatology. In measuring the leg it was further found that although the difference in the size of the two legs was somewhat increased, it was not due to increase of atrophy, but to increase of growth of the sound leg. The atrophy was apparent rather than real. The electrical reactions were perfectly normal. The path-

ology of the case seemed now, for the first time, to be clear, and the clue to rational treatment was obtained, as will presently appear from the sequel.

The conditions in this case, then, were as follows: Probably at the beginning local inflammation, pain and muscular spasm; later, pain, contracture, muscular inhibition, atrophy.

How are these to be explained, and in particular the contracture? A little consideration, I think, will enable us to do so without difficulty. Contracture of this kind is only persistent spasm. If we examine a normal joint we shall find that any attempt on our part to move it is accompanied by more or less spasm of the muscles controlling it, and only by a strong effort of will, if at all, can a person inhibit such involuntary contraction. In the case of an inflamed joint, any motion sufficient to cause pain is followed by marked spasm of the muscles, which may be so intense as to hold the joint perfectly rigid. Now this spasm is, in my opinion, nothing more or less than an exaggeration of a normal condition; but, whether this be admitted or not, spasm of a muscle moving a joint is a classical symptom of joint disease. Further, by extension of the reflex process, limitation of motion in the neighboring joints may be induced; for example, when movements of the hip are limited by disease of the knee.³

Now in the case of A. F., during the first days following the accident, when there was more or less local injury to the joint, the slightest effort to extend the leg was followed

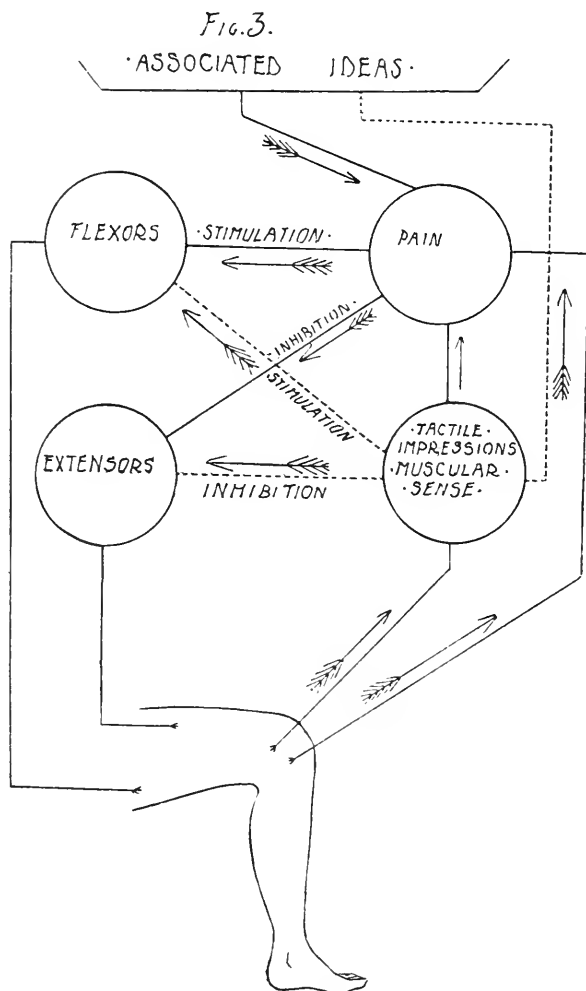
³ Much light is thrown upon the mechanism of contracture from peripheral irritation by a study of the simpler forms, such as are observed in "paradoxical contraction," and the similar phenomena observed in hysterical subjects to which Charcot and Richet have called attention. In such subjects the pain on movement of a joint induces a contracture of the muscles of definite duration. Massage of a muscle or friction of the skin in certain hysterical subjects also causes more or less persistent contraction. I have already reported (*"Bost. Med. and Surg. Jour.,"* 1887) a case of persistent spasm of the tibialis anticus and extensor muscles of the toes maintained by peripheral irritation from the great toe joint. This spasm was in all probability begun as a volitional contraction to relieve pressure, but was afterward continued for at least twenty five years by peripheral stimulation, as a mere automatic process, similar to that we are considering; and this, although no signs of local disease could be made out.

by pain and spasm of the hamstring muscle. At the same time there was voluntary disuse or inhibition of the extensor muscles owing to the pain. The slightest motion, that is to say, the slightest centripetal impression, from the joint due to change of position, excited not only the sensory centres of muscular sense and pain, but the motor centres as well. By constant repetition these centres became physiologically associated together. Sense of movement, pain, muscular inhibition, spasm became firmly united into one automatic process. In course of time the local injury subsided, and with it the local causes of pain; but now, the centres having become thoroughly welded together, the peripheral impressions of movement are alone sufficient to excite the whole process, and pain, muscular inhibition and spasm are excited as before. The automatic process having become once established, it continues as an independent neurosis after the original exciting cause has ceased to exist.

The moment the knee is extended beyond a certain point, the impressions of muscular sense are sufficient to work the automatic process and stimulate not only their own sensory centres, but those of pain and motion. This process is represented by Fig. 3.

So much for the theory; now for the proof. It will be remembered that this girl has been in this condition for over one year and a half. During the first few months that I saw her, about six months after the accident, she improved to this extent, that she could get the heel down to the ground, and the contracture was much diminished, but the leg never could be absolutely straightened. It will be remembered that at the expiration of nearly another year on her return to me she was in the same condition that she was when I saw her ten months previous. No improvement had in that time taken place. It was then that on re-examining her I made out the condition of things already described and obtained the first clue to intelligent treatment. It was based on this theory of an association neurosis, and on the fact that she had lost control by long habit over the extensor muscles of the leg. When directed

to draw up the patella of the affected leg she was unable to do so. She could draw up the patella of the left leg with ease. Therefore the first step in treatment was directed



toward teaching her to regain control over the right inhibited patella. She was first practiced in moving the left patella, and then both in unison. After a few minutes I succeeded in teaching her to draw up the right patella,

and when she did so the spasm of the hamstring muscles began to relax ; and soon, for the first time during my whole observation of her, the leg straightened out and the deformity dissolved. Still forcible passive extension of the leg at that time resulted in spasm and she was unable to straighten the leg while the weight of her body was upon it. After she had learned to draw up the patella while lying down, she was taught to extend the leg completely by kicking—that is, to continue contraction of the extensor muscles after the knee had arrived in the position so long maintained, and until the full extension of the leg was accomplished. This was finally successful. She was then made to stand on the leg and throw the knee back ; later still, to walk throwing the knee back with every step.

Although this training had been carried on under most unfavorable circumstances, that is, during an occasional visit to the hospital, about once a week or ten days, and under the supervision of the mother at home, the result has been that she can now extend one leg as well as the other, and the contracture has disappeared, though the limb occasionally relapses into its former position when she is not observed. The pain has disappeared.

It should be said that to induce these exercises a great deal of moral and physical influence was necessary, as the child was very rebellious and complained of pain about the joint at every effort to straighten the leg, and pretended to be unable to do what was wanted and to suffer in the doing of it. It was not difficult to make out that this was mostly simulated. Otherwise the child showed no hysterical condition. With this result I think I may fairly say that our theory has been proved.

It will be noticed that the consideration of the atrophy has been omitted in this discussion. This was necessary, because there is still much difference of opinion regarding the pathology of atrophy in true joint disease. While orthopædists tend to regard it as due solely to disuse, neurologists generally regard it as due to some neuropathic process. Until this question is decided, one must speak with caution in these hysterical cases; but there are several

explanations, any one of which would be sufficient. In the first place, the atrophy, as has been said, was not as great as appeared at first sight. The great difference in the measurements of the leg was shown to be due to increased growth of the sound leg, rather than to retrograde process in the injured limb, so that the whole may be regarded rather as a hindrance of growth than an atrophy. Or it may be that at the beginning there was a slight atrophy due to the true joint trouble,⁴ and since then there has been simply a retardation of growth. If atrophy of true joint disease is really due to disuse, it would explain everything that is present in this case. If, on the other hand, as I believe, the pathology is more complex, it may be readily supposed that the same inhibitory influence which paralyzed the extensor muscles inhibited the cells in the anterior cornua of the spinal cord and inhibited the growth of the limb. In this case the atrophy would be introduced into the automatic process.

PSYCHICAL ELEMENTS AS A FACTOR IN THE PROCESS.

The study of the pathology of these affections would be far from complete if no account were taken of the psychical elements as a factor in the generation of the neurological process. The mental element undoubtedly plays a very important part, and particularly in maintaining the neurosis after it has been once established. That pain and various other nervous phenomena may be kept alive by the mind dwelling on it, is a well-known fact. It is not, however, so well recognized that symptoms may be maintained in this way in sufficient prominence to constitute by themselves alone a distinct neurosis; although it is well known that when limited to the intellectual side of consciousness they may become so persistent as to form a well-recognized psychosis known as "fixed ideas." In this way an association neurosis may be kept from subsiding and may be main-

⁴ I have known this to occur in a case of paralysis and atrophy from neuritis. The paralysis passed into hysterical paralysis, which was suddenly recovered from in a moment of mental excitement. The atrophy, which was marked, persisted during the hysterical stage.

tained for an indefinite period of time. A very good illustration of the effect of this element may be seen in the following case : I was consulted by a neurotic patient of mine for a very sharp pain in the foot below the inner malleolus. On examination of the foot I found the tissues decidedly puffy at this place and exquisitely tender to the touch. She walked with considerable pain and limped badly. I could obtain no traumatic history. From the puffiness of the tissues and the tenderness, I was inclined to the belief that there was a local injury of some kind—probably a neuritis—but was in much doubt. However, I assured her in a confident tone that the case was plain and that the trouble was “pododynia.” The word evidently struck her imagination and she seemed to be contented. Presently she said to me, “What is pododynia ?” I laughed and said, “Pododynia is pain in the foot.” Upon this she laughed heartily and said, “Never mind. I feel much better already. It is a great comfort to know what it is,” and then she added, “If you doctors would always tell us what is the matter, we should not suffer half so much and would get well much quicker.” In the course of a few hours or so she was walking about without limping and free from pain.

Whatever the origin of the pain in this case it had evidently been maintained as a pure idea. The number of symptoms that may be maintained in this way as fixed ideas is numerous, and may be severe enough to lead to the absolute disability of the patient. Pain, nausea, vomiting, tired feeling and paralysis are very common ; the last especially after railway accidents ; and, in my opinion, they constitute a considerable proportion of traumatic neuroses.

MIMICRY PROPER.

This leads me to another class of hysterical affections closely allied to those following traumatism ; one in which the neuro-mimesis is due to mimicry in the popular sense of the word, without traumatic history. Weir-Mitchell has devoted a very entertaining chapter to this class of diseases

in general. It is most instructive to see to what extremities mere mimicry may reduce the human body. There is hardly any function which may not be disturbed. Paget records the case of two brothers, one of whom had true joint disease, the other the hysterical form contracted by pure mimicry; and Shaffer two sisters, similarly affected.

The exciting cause, however, seems to have been, in Shaffer's case, a slight traumatism. The one with neuro-mimesis had nursed the other during her illness.

Weir-Mitchell, after detailing from his great clinical experience a number of cases of mimicry, many of them extraordinary in their details, says that he has often pondered over them trying to satisfy himself whether the pain so often complained of was really true pain like that suffered by other people. He says he has found it difficult to answer this question; but, after hearing the autobiographies of a number of his patients, he believes the pain is real, though due to the mind constantly dwelling on itself. I should say that in such cases there can be little question about the correctness of this opinion, and that pain of this sort is the true psychical equivalent of stimulated centres; but these centres are excited by an auto-stimulation the result of discharges along association tracks from higher centres.

In other words, we must look for the solution of the primary excitation of these psychoses, not in external causes such as traumatism, but in internal stimulation from previous ideas or mental pictures which secondarily lead to the development of an automatic process similar in every respect to that produced by traumatism. Such a mental process would be identical with that known as the psychosis of fixed ideas—a well recognized type. Taking a specific case in illustration, the automatic process would be developed in some such way as this: Take for example the case of facial spasm recorded by Weir-Mitchell. While showing a case of facial spasm of one of his confrères, Dr. Weir-Mitchell noticed that that gentleman's face was suddenly affected with spasm in a way similar to that of the patient which he was exhibiting. His medical friend was entirely oblivious of the fact and the spasm was absolutely involun-

tary. In this case the excitation of the visual centres corresponding to the visual image of the muscular spasm was reflected along the association tracks to the centres of the facial nerve, the stimulation of which resulted in facial spasm. The whole process was absolutely automatic. Cases of pure mimicry of this sort are not very uncommon. Every one is familiar with the dancing mania of the Middle Ages, which spread like a great plague through a large part of Central Europe. The contagion passed from city to city and from province to province until thousands were affected with this strange disease. In Strassburg it obtained the name of St. Vitus's dance, from which the name of our modern disease is derived. Individuals were attacked with convulsive seizures from merely watching others dancing in their presence. In Italy the disease was known as tarantism, and was supposed to be due to the bite of the spider, the tarantula. The spasmodic movements, once generated, they were beyond the control of the will and continued as automatic processes. Only a few years ago Weir-Mitchell observed a very interesting epidemic of convulsions in a children's ward in a home in Philadelphia. The convulsions were epileptiform, sometimes choreiform, in their character, and often very severe. One child after another became affected until finally more than a dozen were attacked. Some of the cases were very violent and very rebellious to treatment. It became necessary to isolate them from one another and to distribute them among the different hospitals of the city, where they finally recovered, after varying periods of from one to three months. In these cases, although the convulsions were primarily due to a mental impression, the neural process became so firmly engrafted in the nervous centres that it persisted as a neurosis beyond the control of the will. It is well known that many neuroses, although they may have originated in volitional attempts to deceive, nevertheless pass in time beyond the control of the will and persist as true pathological processes.

For example, though vomiting primarily may have been begun by a malingerer or hysterical patient, with the di-

rect desire to deceive, it may afterward persist in spite of the subject's desire to stop it. *When the various neural processes have been well amalgamated, no matter what the original excitant, they seem to be carried on in the lower centres as an automatic mechanism in the form of a neurosis.*

Physiologically this is well recognized and is the basis of education and most of our daily actions. Sewing, reading, writing, piano playing, telegraphing, skating, walking, etc., though primarily begun as a series of individual volitional acts, but later become welded together in lower nervous centres as automatic processes, and are carried on for the most part without intervention of volition. In a similar way processes that are pathological may be originated.

Taking the case of hip disease recorded by Paget, and due to mimicry, the explanation is obviously as follows: The sight of his brother's condition excited by suggestion in a sensitive nervous organization the sensory centres. The result is real pain located in the hip. The limb is held rigidly in one position, partly by volition and partly as a reflex process from the sensory centres, in consequence of the physiological law of spasm in muscles moving a joint in which there is pain. After the pain and spasm have been long continued in association, the spasm becomes contracture. Limp necessarily follows, vaso-motor and trophic centres may eventually be included in the association, owing to diffusion of the stimuli along the physiologically connected reflex tracks. In this way all the symptoms of true joint disease may result, and an independent automatic neurosis may be established.

NEURASTHENIA, TRAUMATIC PSYCHOSES, ETC.

There is another class of diseases in which the association process plays a conspicuous part, and often stands out in relief as the dominant feature in the symptom picture. I mean that large group of diseases known as neurasthenia, including some forms of hypochondriasis and hysteria. I may say in parenthesis that neurasthenia, as a term, means very

little. As ordinarily used in practice, it embraces a variety of very different and distinct pathological conditions. At best I think it represents a bodily condition upon which are grafted various neurotic processes of different pathology. It may be compared to a pool in which when the water is low, various forms of animal and vegetable life previously hidden out of sight emerge from its depths and approach the surface, while numerous foreign fungi and algæ find in the stagnant water a suitable culture for their development; but when the water is high and its circulation is quickened by the inflowing springs, the organic life at the bottom sinks out of sight, and the parasitic growths on its surface perish from contact with the freshened and oxygenated water. So in so-called neurasthenia, when the general vitality is lowered, the individual seems to become conscious of every response of the body to the outside world, and to feel the vital friction, as it were, of the various functions carried on by the internal organ; at the same time neural processes become engrafted upon the nervous system as the expression of the reaction of the depressed organism to the surroundings. On the restoration of the general vitality to its normal level, these processes are, as a rule, broken up, but they may persist as independent automatic neuroses. These neuroses may constitute a considerable portion of the symptom-picture of neurasthenia and allied affections.

And I may say here that I believe that the symptom-picture of many cases of *Traumatic Psychosis* is to be explained in this way. The persistence of the symptoms in such cases is to be explained by the law of association, which also enables us to understand the early recovery of many cases after the award of damages has been made, without imputing fraudulent motives.

The origin and development of this symptom-picture offer a field for study which deserves the attention of the clinician, and if approached from the point of view already laid down, will amply repay the labor given to it. One will be surprised to find how intelligible many symptoms become, which, before could not be explained, or which were simply set down as "neurasthenic."

A few cases in illustration will make clear the application of the principle :

A woman, forty-one years of age, came to me complaining of paroxysms of pain, from which she had suffered for ten years past. The pain was located in the epigastrium and sometimes was accompanied by pain under the right eye, and in the soles of the feet.

It was described as hot and burning in character, "just as if you put your finger on the stove" (as she said). These paroxysms came on nearly every day, and lasted from one minute to half an hour ; when occurring at night, she was unable to obtain any sleep. As a rule, during the day "she could not go over two hours without pain" of greater or less severity. Physical examination showed nothing abnormal beyond a tender spot at the junction of the sixth or seventh rib with the sternum on the left side. She was of a nervous, anxious temperament, easily worried and disturbed by trifles. Cross-examination revealed the fact that ten years ago she received a great nervous shock in the form of some "terrible news." She thinks the first pain came simultaneously with the nervous shock, and she ascribes her condition to that accident. At that time she became "numb all over;" "for four or five months could not sleep at all;" "felt dazed and confused in mind;" if spoken to voices sounded "away, away off;" this is the best description I can obtain of her condition at that time. At present any mental worry or excitement causes a paroxysm; for example, after waiting two hours in my office without seeing me, she went away under the disappointment, "all doubled up with pain." Physically she is in good condition. Is strong and can walk long distances, her spirits are easily depressed or elevated; overtire, worry, disappointment, in fact anything that upsets her mental equilibrium, brings on a paroxysm.

The treatment in this case was static electricity. After a few sittings, the paroxysms of pain ceased; she was in every way better mentally and physically. She said "she felt like a different woman." She was free from any attack while under observation, for a period of four or five weeks, when she was discharged.⁵

The order of events in this case I conceive to be as follows: Ten years ago this patient was attacked with an acute nervous illness, of which two prominent symptoms were mental distress and epigastric pain. These two pro-

⁵ She reported herself several months later still free from attacks.

cesses were so frequently associated together, that a reflex physiological connection became established between their nervous centres; the presence of the one then necessitated the reproduction of the other; and when later recovery from the acute illness occurred, the association being persistent, the presence of any physiological excitement or anxiety, was necessarily accompanied by a paroxysm of pain. The pathological condition lay in the association of two centres, and not in the centres themselves. The treatment resulted in the breaking up of this association, probably by means of suggestion.

A young woman, consulted me last October, 1890, in consequence of peculiar attacks of distressed breathing from which she suffered. The description of these attacks was that of wheezy respiration and a sensation of suffocation. They were sufficiently frequent and severe to oblige her to give up her occupation. Besides this she was anæmic, drank tea to excess, and had very little appetite and suffered from loss of strength; in other words, the usual condition of general debility. Careful inquiry elicited the fact that these paroxysms of suffocation were preceded by a train of minor symptoms, which developed in the following sequence: Ball in throat, fright, feeling of blood rushing into eyes, trembling, palpitation, chill, distressed breathing, crying spell, aching of heart. It further appeared that menstruation did not come on till she was 20 years old, but previous to this she had had numerous attacks of epistaxis. Ten years ago she suffered from slight attack of hæmoptysis, and has done so about once a year ever since. These attacks always precede by a day or two the catamenia. Lungs are normal. When the hæmoptysis comes on she has the following sensations: Feeling of blood in throat, fright, trembling, palpitation, pricking feeling in chest, chill, crying spell.

I was struck with the similarity between these two groups of symptoms, and further inquiry brought out the fact that when in her later attacks she felt the lump in her throat, she always imagined it was blood, and was frightened in consequence. The rest of the symptoms then followed by association. The attacks were brought on by almost any mental excitement, such as being obliged to hurry, being in a crowd, cross words, etc.

The paroxysms of distressed breathing had another origin. This first came on during an attack of gripe, dur-

ing the preceding December, and was apparently one of the neuroses so frequently seen following that disease, probably caused by the poison. It was then tacked onto the other group of symptoms, and the whole formed an association group.

The treatment consisted in forced feeding and static electricity. She rapidly gained in weight, and on Dec. 31 was discharged perfectly well. She had been ill nine months.

I may also cite here the case of a neurasthenic patient who exhibits a very irritable nervous system. This patient suffers considerably, when pregnant, with a variety of symptoms largely referable to the abdomen. When in this condition she suffers from great exhaustion, considerable nausea, abdominal pains of all kinds, tympanitic distention of the abdomen, paræsthesia of the left side, and various other symptoms. The exhaustion, faintness and abdominal distention are extreme. At present almost any strong irritation of the abdomen, such as massage, electricity, jolting in a carriage, etc., muscular and nervous tire, will result in the production of the same set of symptoms, and all the phenomena of pregnancy are exhibited, or at least of disturbance of the pelvic organs. It is proper to say that this patient at one time in the past suffered from some sort of pelvic inflammation, accompanied, so far as I can learn, by very similar train of symptoms.

The explanation of such groups of symptoms, is properly to be found, not in peripheral nerves, nor in spinal or cerebral centres, but rather in associations established by previous acute processes between such centres, or to diffusion of stimuli along physiological channels. It may be regarded as a hyper-excitability of the association systems of fibres, or a species of pathological physiology. I will not take the time for the citation of further illustrations, but I think that every one will be able to recall cases which will be better explained in this way than by any other.

The practical corollary from this theory is that in a large class of neuroses we are to look for their causes, not in diseased nerves and centres, but rather in a pathological association of normal anatomical elements, and the treatment is to be directed to the breaking up of this association, and the re-grouping of the nervous centres.

THE EMOTIONAL ELEMENT IN THE PUERPERAL PERIOD.¹

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THE history of general medicine affords no more striking contrast than that shown by a comparison of the ignorant midwife of former times with the scientific obstetrician of to-day. Modern science has done much for midwifery. As an example I might refer to the flood of light she has thrown upon that class of preventable diseases formerly included under the name of puerperal fever. It is not my aim, however, to say much about what is termed scientific medicine, or that portion of it which is called scientific obstetrics. Torrents of eloquence have been expended in that direction, and mountains of literature on the subject have been placed at our disposal. We have heard so much about it, and have become so distended by the amount of science that is contained within us, that there is some danger of our becoming the most conceited and priggish race of physicians that the world has ever seen. We are apt to look back on the "old fogies" of twenty years ago, who wandered about in total darkness, with patronizing pity, and complacently consider, at the same time, what wise fellows we are in 1891.

I would not like, however, to be misunderstood in this connection. I have the highest possible respect for science. Extended researches and conscientious work in her mysterious labyrinths and boundless fields, tend to fill her devotees with modesty and humility; but small amateur performances in the outskirts of her domains may produce totally different results. Whatever our merits or defects may be in this direction, we have to consider, as in other de-

¹ Read at meeting of New York State Medical Society, February 4, 1891.

partments of our profession, that obstetrics is both a science and an art. Our methods of art which are founded on those scientific principles which relate to the causes and prevention of sepsis are probably better than any known in the past; but, at the same time, I think it possible that we may overlook certain methods which were considered of great importance by the old fogies before referred to.

In the literature of twenty years ago we find many references to serious effects, such as puerperal fever, eclampsia, mania, etc., produced by emotional causes, such as worry, fright, anger and the like. More recent developments showed conclusively that many of the results referred to were due to septicæmia. The innumerable discussions on sepsis and the various means adopted for its prevention have, to a certain extent, overshadowed the emotional element in the puerperium. Many go so far as to deny that simple emotions can cause serious rise of temperature. I have given the subject considerable attention during the last ten years; and, although I have not arrived at very definite conclusions, I have carefully observed many cases which proved conclusively to me that very serious results may follow causes which are purely nervous in their origin.

We have no very precise knowledge of the causes of fever. We know that heat is generated in the body through certain changes taking place in the tissues, especially in the skeletal muscles and in various secreting glands. We know that heat is lost by various media, especially the skin and lungs. Fever, as we understand the word, appears to be due partly to a diminished loss, but chiefly to an increased production of heat. This production is probably under the control of a metabolic or thermogenic mechanism, the heat centres being found in the brain, either in the corpus striatum or in the optic thalamus, or both. In the pregnant and puerperal state all the nerve centres are supposed to be in a state of hyper-excitability, but it seems to me that this is especially true in regard to the psychical and heat centres. It seems likely that profound impressions on the psychical centres cause, in some unexplained way,

certain effects on the heat centres, and these in turn produce those remarkable results which may be evanescent or somewhat permanent in their character.

The following brief notes of a few among many cases which have come under my notice will illustrate some phases of the subject.

I. Mrs. A., æt. 23. Unusually healthy and free from hysteria. Second labor: normal until fifth day, when in making my ordinary visit I found her condition quite serious. She was weeping, had a severe rigor, temperature 104° , pulse 125, milk secretion and lochia normal. On inquiry, found she had had a dispute with her nurse, who was acting badly in various ways, but especially in her treatment of the babe. After talking to her for some time, and giving her the assurance that I would not allow the nurse to see her again, she became quiet. The husband was sent for, and the nurse at once discharged. In the evening temperature and pulse were nearly normal, and on the following morning patient felt perfectly well.

II. Mrs. B., wife of a clergyman, highly educated and refined, but inclined to hysteria. Third labor. Progressed favorably for five days. On the sixth day I was sent for at 7 A.M. Found her greatly excited and alarmed. She had passed a restless and sleepless night; pulse 115° , temperature 103.5 . Milk secretion and lochia normal. She had heard the evening before an exaggerated report of the prevalence of puerperal fever in the neighborhood; her babe was restless, and she thought that she and the little one were going to die. My assurances of their mutual safety had little or no effect for some time, so I took possession of an easy chair, made myself as comfortable as possible, and determined to remain there until I became master of the situation, although it happened I could ill afford the extra time required. In our conversation which ensued I managed to get away from the interesting subject of the rate of mortality and child-bed fever, and in about half an hour my patient was much improved. She had been taking for three or four days a mixture containing quinine and ergot. I made no change in the medicine, but trusted rather to the psychical, or hypnotizing influences, or whatever you may care to call them, left her in a comfortable frame of mind, and found her in the afternoon comparatively well.

III. Mrs. C., æt. 28. Fourth labor; normal, no drawback excepting a tendency to constipation. On the evening of sixth day took cathartic medicine. Nurse was instructed to administer an enema on the following morning if necessary. The patient had decided objections to enemata, which were unknown to me. She worried about the matter during the night and appeared feverish and excited in the morning when I saw her. Temperature 102.5° , pulse 110. Her bowels had not worked and she disliked the proposed enema. I was considerably perplexed, but could find no physical cause for high temperature and rapid pulse. Hoping that the cause might be purely emotional, though almost ludicrously slight, I simply told her that no enema would be necessary in any case, and gave her another cathartic. In the evening she was quite well; pulse and temperature normal. Her bowels had moved in the meantime.

IV. Mrs. D., æt. 23, healthy. First labor. Normal until the afternoon of the seventh day, when I found temperature 103.5° , pulse 110. No other bad symptoms; lochia normal. Suspected nervous origin. With this point in view asked various questions as to worry, anxiety, etc., but could get no satisfactory information as to cause. I was at a loss to account for the high temperature, and told the husband, who was a medical man, that it looked to me like an emotional fever, and asked again if she had not been startled in any way. The doctor then said: "Yes, I had quite forgotten that she was very much alarmed because her pet dog had fallen out of the window in the morning and she feared he was killed. She was somewhat excited for a time, and had not been so well since." The next day she was much better, and in less than forty-eight hours her pulse and temperature were normal.

V. March 3, 1889, M. J., unmarried, æt. 24; normal labor in Burnside Lying-in Hospital. Highest temperature for eleven days 99° . On twelfth day vomited blood from gastric ulcer, after which temperature rose to 103° . Next day temperature normal and remained so until nineteenth day, when she had a second attack of hæmatemesis, after which temperature rose to 102.5° . On the following morning the temperature was normal and remained so until she left the hospital a few days afterward.

VI. Jan. 22, 1889. M. H., unmarried. Labor normal. Temperature normal until tenth day, when she was visited by her mother, who had an interview with her alone. After

the mother left the matron found patient much excited and crying. Temperature 105° , pulse 120. Next morning temperature and pulse were normal, and remained so until she went out on the fifteenth day after labor.

VII. Mrs. A., æt. 27, quadripara, healthy. Labor normal. Symptoms of slight septicæmia appeared on fourth day. On four different occasions during four weeks the temperature rose suddenly from emotional causes. There happened to be an entire absence of that sympathy which should exist between patient and nurse, and the two were continuously at "cross purposes." The nurse was honest and conscientious, but singularly injudicious, and acted in such a way as to be a continuous source of irritation to her patient. On the twelfth day an accident happened to the babe, which much alarmed the mother. She became greatly excited and I was sent for, but did not arrive until two hours had expired. In the meantime the nurse was much distressed, and went repeatedly to the window to look for me, and finally became as much excited as her patient, and wondered if the "doctor would ever come." On my arrival I found the patient in a serious condition. She had a rigor, temperature 104.5° , pulse 120. I have not time to go into fuller particulars, but may say there appeared to be a combination of septicæmia and emotional fever, which certainly imperilled the patient's life. She was confined to bed six weeks, but made a perfect recovery.

It is, of course, difficult to arrive at definite conclusions with mathematical exactness, but I think there can be no doubt in cases I. and VI. that the rise of temperature and accompanying symptoms were caused by emotional reactions, purely and simply. From an observance of such cases I am fully convinced that an emotional explosion may cause a rise of temperature to the extent of seven degrees or more within a short time—certainly less than an hour, perhaps a few minutes.

Case II. is one of a class very common, I think, in obstetric practice. An intelligent, bright, quick-witted woman, an earnest helpmate to her husband (a clergyman), devoted to his parishioners, she knew by observation, as well as experience, the stern truth of the words, "In sorrow thou shalt bring forth children;" and had, perhaps, an ex-

aggrerated idea of the dangers connected therewith. With a highly nervous temperament, it was no difficult matter for an officious friend to fill her with serious apprehension. The harm that stupid, meddling gossips can do under such circumstances is simply incalculable. Any physician who can contemplate examples of such stupidity without any indulgence in profanity is worthy of the reverence of posterity.

Cases III., IV. and V. require no special comments. In III. and IV. we have results somewhat similar to those in I. and VI, but not so pronounced; while the causes are so trivial as to be almost absurd. In V. there was a rise of temperature on the twelfth and nineteenth days after slight attacks of hæmatemesis, due to chronic gastric ulcer. I inferred that in each case the alarm at the sight of blood had sent up the temperature. I have not observed that similar results follow hæmorrhage from gastric ulcers in non-puerperal cases.

Case VII. leads to the most important aspect of the subject, and brings me to the question : May emotional causes produce effects during the puerperal period which show alarming symptoms, and even endanger life? I believe the correct answer to that question is, yes. In the case before us, which I watched very carefully, I felt certain that the dangers to my patient were vastly increased by purely emotional causes due principally to the want of tact of the nurse. It seems to me that any one who believes that a nervous cause may produce an elevation of temperature to the extent of six or eight degrees, can scarcely refuse to assent to the opinion that in many a serious case, when life is in danger, such nervous disturbance may turn the balance in the wrong direction.

I have in my mind two cases, seen in consultation, which resulted fatally; and I firmly believe that the unfortunate results was largely due to a sad combination of lack of judgment in the attending physician, stupidity in the nurse, and something approaching idiocy in the friends. I unfortunately cannot go into details. I can hardly publish the fact that I met Dr. Jones last week, month or year, in con-

sultation, and found that he was managing the case with fatal stupidity. I know of no subject connected with the puerperal period which is more difficult to elaborate than this. The older obstetricians recognized the importance of the nervous element in such cases. For instance, West says in 1875: "I remember the case of a lady who progressed perfectly well after an easy labor; but owing to some violent scene of domestic strife with her husband, she was seized almost immediately with symptoms of puerperal fever, and of that disease she died." I think it quite likely that septicæmia may have been the cause of death in a large proportion of such cases; but I am decidedly unwilling to rush to the other extreme and think that every increase of temperature is septic. Where there is a single explosion during the puerperal period, as in some of my cases, and a sudden rise and fall of temperature within a few hours, the great rapidity of such processes appears to preclude the idea of septicæmia.

I have been pleased to notice that certain obstetricians on this continent, such as Hirst, of Philadelphia, who calls such rises of puerperal temperature "emotional fever," Cameron of Montreal, and others have recently called the attention of the profession to the subject.

I would like to have referred to the influence of the emotional element in connection with eclampsia, mania and other diseases of the puerperium, but want of time prevents. I cannot refrain, however, from quoting the following words of Dr. Fordyce Barker (*The Puerperal Diseases*, 1874), whom I consider one of the most acute observers, one of the most skilful obstetricians, and one of the best writers on the subject that this country has ever seen: "It is my firm conviction that mental emotions constitute the exciting cause of puerperal mania infinitely more frequently than all other causes combined. . . . I will mention a curious fact that has occurred in my experience. Since 1855 I have seen thirteen cases of puerperal mania in the wives of physicians, nine in New York and four in adjoining cities. All but one were primiparæ. It has struck me as very remarkable that so large a number should have occurred in one special

class, and think the following is the possible explanation: All of these were ladies of education and more than usual quickness of intellect, and beginning a new experience in life, and having access to their husbands' books, they had probably read just enough in midwifery to fill their minds with apprehension as to the horrors which might be in store for them, and thus developed the cerebral disturbances, just as any other moral emotions may."

One of my reasons for bringing this subject before you may be found in the fact that certain evils have arisen out of our modern methods of laboratory and hospital teaching as compared with the old-fashioned apprentice system. It appears to me, as has been pointed out by others, that there is at the present time considerable danger that we are cultivating science at the expense of art in our profession. I have noticed in medical students, trained nurses, and resident physicians and surgeons in hospitals, a tendency to look upon the sick and wounded as mere machines, and not as fellow beings made of flesh and blood, and endowed with nervous organizations, which are capable of unlimited sufferings. I have seen many acts of positive cruelty on the part of those who appear to aim at treating the diseases and injuries, and not the patients.

If you grant with me that the emotional element in the puerperal state is a powerful factor for good or evil, you must of necessity agree that it is all important that we should ever endeavor to treat the peculiarities and idiosyncrasies of our patients, as well as the serious ailments and emergencies which may arise. We should always strive to guard them against undue excitement from any cause. Much depends on the manner and methods of the obstetrician. He should avoid what may be called fussiness, but at the same time be ever on the alert. He should be quiet and kind without being weak and irresolute. In the lying-in chamber he is watching what should be a physiological process in one who is fulfilling the noblest function with which God has endowed her. He should, so far as possible, sink self into oblivion and think only of the interests of her whom he is called to serve. He should have his obstetric satchel well

equipped, he should be armed with a supreme knowledge of the best definite method of treating all emergencies; but he should keep his satchel and his knowledge in the background until they are actually required. He should use all the tact with which he is endowed, and at the same time exhibit unlimited firmness concealed under a kind and gentle manner. He should make all the surroundings for his patient as cheerful as possible, while enjoining perfect rest and quiet. He should strive to imbue nurses and immediate friends with the ideas herein expressed, and, if possible, keep all curious visitors and gossiping neighbors out of the house.

Possibly I may attach too much importance to what may be considered small matters; but it has appeared to me that in the practice of our art nothing can be deemed small. The success of the physician or surgeon depends on the strictest observance of things great and small, down to the most minute details. The most successful in our noble sphere of alleviating the ailments of our suffering fellow creatures, have in all times been acutely observant, exceedingly watchful, and ever kind and gentle. In the practice of obstetrics we should be second to none in the rigid and careful observance of all the rules, whether manifestly great or seemingly insignificant, which are likely to conduce to the welfare of our patients.

OPERATIVE TREATMENT OF PARALYTIC LIMBS.

Some encouraging results in the operative treatment of these unfortunate cases are reported by Dr. Karewski, "*Deutsche med. Wochenschrift*," an abstract of which appears in the "*Archiv für Kinderheilkunde*." His first aim is to put the limb in the best possible position for future usefulness, and then try and secure ankylosis by setting up irritation and exudation in the joint. The author has treated four cases of paralytic subpubic luxation, by this method, with very satisfactory results. Where the musculatur in connection with any joint is incurably paralyzed, and the joint useless, the limb dragging, the operation method is called for.

B. M.

CLINICAL REPORT OF THREE CASES OF INSANITY OF CHILDHOOD.¹

By THOMAS L. WELLS, M. D.,

Brooklyn, N. Y.

CASE I.—I. S., female, age fifteen years; German parentage. Father an engraver by trade, industrious, and of a quiet disposition. Mother exceedingly emotional, showing poor judgment in matters relating to her children and household affairs. One sister and one brother, both apparently of normal development, but not particularly bright. Patient was fretful and peevish as an infant, had scarlet fever at four years, followed by dropsy, pneumonia at nine, from which she made a good recovery; at twelve had same disease again with very slow recovery; attended school regularly excepting during the illness, and was well advanced in her studies. During her fourteenth year, during the winter of '86 and '87, she studied unusually hard, trying to secure a prize which was offered in her school, gave herself no time for recreation, and scarcely time to eat her meals; also became very irritable, manifesting an unusual temper when remonstrated with. In August, 1887, went to the country with her mother in the hope of improving her health, but instead of improving became melancholic, refusing to play with other children, and exhibiting peculiar ideas regarding her dress and bodily development, insisting upon having her dresses made shorter than customary, and limiting the amount of food, with the idea of restraining her physical development. Came back to the city in September and returned to school; continued to manifest peculiar notions regarding her clothing, refusing to wear anything that would make her appear less childlike; finally, insisted upon wearing a tight-fitting corset, in order that she might compress her chest and prevent normal development. When opposed in these matters, would cry for hours, exhibiting uncontrollable temper and agitation, accusing her mother of lack of interest for her comfort; would throw herself upon the floor, kicking and screaming until her point was carried.

¹ Read before the Brooklyn Society for Neurology, January 14, 1891.

In October showed slight symptoms of chorea, which disappeared in about two weeks, but again returned during the latter part of December, and she became more irritable, commanding her mother in a most arbitrary and unnatural manner, insisting upon wearing her corset still tighter, and compelling her mother to fondle her like a small child every night before going to bed, and again immediately upon waking in the morning. If the mother demurred or tried to reason with her, would immediately become violent and unmanageable, throwing herself about with great violence, bruising her body and screaming until her point was yielded.

On February 16, 1888, patient came under my care through the kindness of Dr. John C. Shaw. She had never menstruated. At this time the choreic movements implicated nearly all the muscles of the body; she was wearing dresses that did not reach to within several inches of the knees, with underclothing proportionally small. The corset was drawn so tightly about the chest as to seriously interfere with respiration. The removal of this precipitated an outburst of excitement seldom witnessed in a child of her age. She was placed in bed with a nurse in constant attendance. Continued violently agitated, screaming and talking incoherently, revealing hallucinations of sight, upbraiding her mother for deserting her and refusing to take food voluntarily. This continued for a week, during which time she slept only when under the influence of morphine, chloral or hyoscyamine. Doses of 30 grs. of chloral hydrate, $\frac{1}{2}$ gr. sulphate of morphia, or $\frac{1}{16}$ gr. of the amorphous alkaloid of hyoscyamine, (the two latter hypodermically) would only produce from three to four hours sleep, and immediately upon waking the disturbance continued unabated. We were finally compelled, through fear of exhaustion, to allow her to replace the corset, although insisting upon its being worn in a more comfortable manner. The violent symptoms now immediately subsided and she partook of food voluntarily; the choreic symptoms persisted for about four weeks, but yielded without trouble to treatment consisting of tonics and arsenious acid taken in doses of $\frac{1}{100}$ gr., and increasing to $\frac{3}{100}$ three times daily. She required constant watching to prevent her tightening her corsets, which she would do whenever an opportunity presented; later on was prevailed upon to wear a child's corset, fitting comfortably, but would not wear dresses to reach below the knees.

On April 16th her parents insisted upon taking her home, as she appeared fairly well. Condition continued good for

about a month; then began to manifest the same old peculiar ideas, and became more irritable than ever, steadily growing worse until about September 1st, when it became impossible to keep her at home any longer, as the neighbors complained on account of the noise she made. At this time she was again committed to my care. During her stay at home she had compelled the mother to make a strong canvas waist, which, when in position, would not meet in the back to within about three inches, but would insist upon having it buttoned up, making the mother compress her chest with her hands while her sister buttoned it with a large shoe hook. This waist I had removed, telling her she should never wear it again, and to emphasize the matter had it destroyed in her presence. The following week was a repetition of the experience we had on her first admission, but with somewhat more mental disturbance, and with more resistance, it being necessary to administer nourishment with a stomach tube. At times appeared entirely oblivious to pain and not to appreciate what was done or said about her, manifesting decided hallucinations of sight and delusions of persecution; after seventh day began to realize her condition, but appeared utterly unable to control the violent agitation, and begged for hypodermic injections of morphine, the nature of which she was not familiar with except that it quieted her pain. From this on all of the symptoms, excepting choreic movements, improved rapidly; these persisted with but little improvement for the next five months, although arsenic in the form of arsenious acid was pushed until its full physiological effect was produced. Electricity, tonics and massage were used with no apparent benefit, the left leg was partly flexed with the tendons contracted to such a degree that she was compelled to walk upon ball of foot.

About March 1, 1889, discontinued other medication and prescribed antipyrine in 10 gr. doses, three times a day after meals; at the end of ten days it was discontinued for three or four days, then renewed again; at same time had patient take daily exercise upon tricycle and roller skates; improvement in choreic symptoms immediately began and continued, until at the end of two months chorea had entirely disappeared, and she was able to walk normally.

In June menses appeared for the first time, and from this time until her discharge, September 14, 1889, we had no further trouble with her. Up to present time patient has remained well, is attending school regularly, making rapid

progress in her studies, and makes no reference to the perverted ideas which she formerly manifested.

CASE II.—P. S., female, age eleven years, German parentage. Father a successful business man of rather an excitable nature. Mother of a particularly fussy disposition, exceedingly exacting in regard to everything relative to the dress and conduct of her children. Two brothers, both young men; the younger is apparently bright and intelligent, the older brother displays rather an eccentric manner, rather indicating a retarded mental development. Patient has been rather delicate physically from birth, has a mitral regurgitant murmur, dating from infancy, but which does not appear to cause her any discomfort; her pulse ranges from 90 to 100 per minute. Has always been exceedingly willful in her manner, has attended school but little on account of not being able to agree with her teacher or playmates, never being willing to give in to an opinion which deviated from her own. From her ninth year she has been more obstinate than ever, showing morbid antipathy for her mother, insisting that she is not her mother, and persisting in being angry with her upon the slightest provocation, refusing to do what her mother wished her to do. This feeling led to frequent attacks upon the mother; when she would strike and kick her in a violent manner. Patient came under my care January 22, 1888, through kindness of Dr. Shaw. For some time previous to this she had been morbidly suspicious of persons with whom she came in contact, claiming she smelled a disagreeable odor about her food, and frequently refused to eat; at times thought the pictures upon the walls were turned upside down. On admission, appeared very suspicious of every one who talked with her, spoke very guardedly, being careful not to commit herself upon any point upon which she was urged to express herself. At first refused to go to the dining-room or eat, but immediately gave up this notion when she found she would be compelled to do both. At times would reveal hallucinations of smell, but did not refuse to eat. Frequently would break out laughing, when there was nothing to provoke laughter; when corrected would stop, but in a few minutes would break out again. Said she did not know what she was laughing at, but could not help it. For several months she was very reticent, refusing to enter into conversation regarding matters concerning her troubles, exhibited a violent temper upon slight provocation, called her mother all sorts of vile names, and in fact disclaimed

any affection for any member of her family, excepting her younger brother. Was very persistent and determined to have her own way, and when not successful would remain sulky and disagreeable for two or three days. Frequently revealed hallucinations of smell, and occasionally of sight; at one time when about to retire for the night, persisted that she saw a snake in the bed. Medication consisted of tonics, cod-liver oil, and for a time Fairchild's essence of pepsin, when her digestion was faulty. By careful management, reasonable but firm discipline, her condition improved, so that at the end of five months she was a very pleasant member of our family, showing a disposition to carry out our expressed wishes regarding her conduct.

In August, seven months after admission, her family decided to take her with them on a trip to the White Mountains. They were compelled, however, to return with her in less than a week, as she again manifested hallucinations of smell, said the food was stinking and refused to eat. These symptoms entirely disappeared upon her return, and we had no difficulty in her management until January, 1889, one year from admission, when she had an attack of tonsillitis, followed by otitis media. As she then expressed a desire to return home, it was deemed advisable to have her do so. Since her return home she has continued fairly well, showing no further indications of delusions or hallucinations, but at times manifesting a disposition of willfulness and stubbornness. The dislike to her mother seems to have almost disappeared.

CASE III.—W. J., male, age fourteen years; American parentage. Mother said that she had "trouble with her head" when a child; at present shows no mental disturbance, but is below the average in intelligence; no satisfactory history of father, as parents separated when patient was an infant. No brothers or sisters. Patient was an inmate of a home for boys from the age of six to nine; his mother then removed him and supported themselves by dressmaking. He attended school until the age of twelve, when he became a cash boy in one of the large dry goods houses in this city. He now began to act peculiar, showing by his actions that he believed himself to be persecuted. One night he failed to return home, remaining absent for three days, when he was found by the police, having wandered about the streets in the meantime. His conversation was disconnected and contradictory, claimed a well-dressed man had approached him when about to leave the store,

and by promises of presents and a good time, had induced him to accompany him, but gave no satisfactory statement of where he had been. He was kept at home for some time after this and closely watched, but finally was sent to school. One day in June he failed to return from school and was not found for a week afterward, when his mother gained information that he was in a vacant lot, which was covered with trees and bushes. She succeeded in finding him, but could not get near him for some time, as he appeared frightened and terrified, his clothing was in rags, and he had evidently been sleeping out of doors, and living on what berries he could pick from the bushes. He told a long, rambling story of having been drugged while at school, and that when he became conscious, found himself in a village on Long Island some thirty miles distant from the city; that he had walked back to the city, where he had been persecuted by men and boys armed with pistols, who tried to shoot him. His mother gained reliable evidence that he had been in the vicinity where found during his entire absence. I saw him for the first time shortly after this, and am convinced that his stories were not manufactured simply to deceive his mother, but that he firmly believed himself to be the object of persecution by an unknown person. His mother consulted me with a view of placing him in an asylum, but as there did not seem to be any proper place available that was within her means, I advised his being kept at home, not allowing him to go upon the street unattended. He complained of an aching of the eye-balls whenever he made an attempt to read or study. I instructed his mother to take him to the Eye and Ear Hospital and have his eyes examined. She informed me later that he had been provided with glasses for astigmatism, but did not get further knowledge of exact condition of eyes. For past six months he has been attending school regularly, making fair progress with his studies, but still reveals by his actions that he is at times suspicious of those about him.

REMARKS.

I have presented these cases as fairly illustrative of many instances of insanity met with in children before the age of puberty. The cases reported are not numerous. First, because children of their age are rarely sent to institutions for treatment.

Secondly, because the majority of cases having hereditary tendencies, and even showing partially arrested devel-

opment, do not manifest marked mental alienation until near or after the age of puberty. Heredity, faulty education and education by parents of disturbed mental balance, seem to be the principal causative factors in producing the disturbance in these cases.

In the first case I look upon the chorea more as the result of the mental disturbance than as the causative factor of the perverted ideas. In the second case the heart lesion may possibly stand in the relation of a causative factor, but it would seem more reasonable to look upon it as one of the manifestations of arrested development, and as probably being congenital. In the third case, the boy, I am inclined to regard the ocular defects also as simply an evidence of imperfect development.

It is a difficult matter to satisfactorily classify these cases. While epilepsy seems to be the most common nervous disease in children, all forms of insanity do occur, except paresis, even so early in life. They are more likely, however, to partake of the character of mental defect, and the majority of cases may be properly classed under the head of idiocy or imbecility. I believe it is fairly stated that of the greater number of cases of insanity in children, some are examples of intellectual deficiency, the rest, examples of moral perversion or deficiency, with or without excitement. Indeed, most cases described as examples of mania, because of great agitation of mind and body, might very properly be classed as cases of idiocy or imbecility with maniacal excitement.

Our method of management and treatment of these children, must vary according to the demands of each individual case. In the majority of instances, where the home influences are apt to be of an unhappy character, removal from these surroundings to a suitable institution will often result in great benefit; but whatever plan is adopted, the fact should never be lost sight of, that a large number will improve, so as to at least enjoy life, if not to become useful members of society, and our efforts should always be directed with this aim in view.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

*From the Swedish, Danish, Norwegian
and Finnish:*

FREDERICK PETERSON, M.D., New
York.

From the German:

WILLIAM M. LESZYNSKY, M.D., New
York.

BELLE MACDONALD, M.D., New York.

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:

JOHN WINTERS BRANNAN, M.D., New
York.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo,
N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport,
Mass.

*From the German, Italian, French and
Russian:*

F. H. PRITCHARD, M.D.

ALBERT PICK, M.D., Paris, France.

From the English and American:

A. FREEMAN, M.D., New York.

From the French and German:

W. F. ROBINSON, M.D., Albany.

ANATOMICAL AND PHYSIOLOGICAL.

THE VOMITING CENTRE.

In an article on this subject, Prof. Lazarus J. Thumas, ("Virchow Archiv,") endeavors by careful research and pharmacological experiments on animals, to give some practical facts in regard to the vomiting centre, and the value of different emetics under certain conditions. His investigations led him to the conclusion that the vomiting centre is not as closely identified with that of the respiratory centre as has formerly been supposed, but that it occupies a different position, in relation to the calamus scriptorius, and lies deeper in the medulla oblongata than does the centre for respiration. Of the emetics, only two agents of this class were found to produce specific emesis, and those were apomorphia and tartar emetic. The first of these was more rapid and distinct in its action, especially when the solution was dropped into the eye, as absorption took place more readily in this situation. With such emetics as the sulphate of zinc and copper, the dose had usually to be of such a quantity as to produce a profound impression on the entire nervous system.

B. M.

PHYSIOLOGICAL.

THE EFFECT OF ANÆMIA OF THE NERVE-CENTRES UPON THEIR EXCITABILITY.

V. Aducco has recently made some experiments upon dogs for the purpose of determining what effect partial and temporary anæmia of the nerve-centres has upon their excitability (*Archives Italiennes de Biologie*, tom. xiv., fasc. 1 and 2, 1890; *Lo Sperimentale*, Jan. 31, 1891).

In a first series of experiments Aducco ascertained the normal excitability of the nerve-centre by applying a weak faradic current directly to the nervous tissue. He then produced anæmia by compressing the carotid and from time to time tested the excitability of the centre. After reëstablishing the circulation, the tests were repeated.

In a second series the degree of excitability was determined indirectly, the current being applied to the peripheral nerve or to the skin of the region in which it was desired to produce a reaction.

In some cases the anæmia was brought about by venesection instead of compression of the carotids. The centres in the spinal cord were tested as well as those in the brain.

Aducco, as a result of his experiments, comes to the following conclusions: "When the supply of blood to the nerve-centres is diminished, their excitability is thereby increased. It is probable that this exaggerated excitability persists throughout the whole duration of the anæmia. There would seem to be, within certain limits, an inverse proportion between the *nutrition* and the *excitability* of the nerve elements. The latter increases uniformly as the nutrition diminishes."

J. W. B.

PATHOLOGICAL.

THE NERVOUS TROUBLES OF URÆMIA.

Lancereaux, who has written much and well on the nerve-intoxications, discusses the NERVOUS TROUBLES OF URÆMIA in his recently published "*Leçons de Clinique Médicale*."

The nervous perturbations in uræmia have not the same significance as the digestive. The gastro-intestinal phenomena, in fact, are, at least at their onset, compensatory.

They present a character of utility, even to some extent of necessity, which must be recognized, and which regulates therapeutic interference. The nervous accidents, on the contrary, constitute always symptoms of ill omen, which must be combated as soon as possible. Moreover, the disorders of the first category result from an elective action on the digestive mucosa, the excretory function of which is solicited by the afflux of excrementitious principles. There is nothing like this in the reaction of the nervous system, which is simply encumbered, like all the other tissues, by the products of disassimilation; only it reacts more energetically by reason of its special excitability.

Among the accidents purely nervous, we may first isolate and describe apart the group of *cardio-pulmonary accidents*.

In dyspnœic uræmia the thoracic organs are not directly affected. They only give expression to the functional disorders of the nervous centres.

Dyspnœic uræmia presents three principal varieties: Simple dyspnœa, paroxysmal dyspnœa and spasmodic dyspnœa. Simple dyspnœa is characterized by acceleration and variations of extent of the respiratory movement and by the breathlessness which follows the least effort, even walking. Examination of the mode of respiration always shows a predominance of the diaphragmatic type. This is, moreover, the characteristic of uræmic respiration in general; it is almost exclusively diaphragmatic. The costal type is seen only in uræmic patients who have at the same time material lesions of the lungs or heart. The simple dyspnœa of uræmic patients is sometimes accompanied with laryngeal phenomena, hoarseness of the voice and inspiratory sibilance, which may even simulate serious obstructive disease of the upper air-passages, so as to seem even to call for tracheotomy.

The paroxysmal dyspnœa of the uræmic has been long known as the *Cheyne-Stokes* respiration. It consists in the succession, regular and periodical, of a phase of apnœa or pause, and of a phase of dyspnœa in which the inspirations, at first infrequent, short and superficial, augment gradually in amplitude, become more and more frequent, profound and noisy, then decrease progressively to another pause. The period of apnœa is generally limited to thirty or forty seconds; the complete cycle has a duration of several minutes. The circulation is always more or less embarrassed, the lips are cyanosed; the pupils are contracted during the pause, to become dilated when the respiratory movements are resumed; the psychical faculties are more or

less obtuse. Apart from the probable influence of cardiac steatosis and certain organic cerebral affections in occasionally causing this form of dyspnœa, it is generally renal and uræmic in its origin, and one or two energetic purgatives often suffice to cause it to disappear for a time.

Spasmodic dyspnœa resembles much spasmodic asthma, and hence has been often described as uræmic asthma. It comes on suddenly, like an attack of purely nervous asthma, and generally without any appreciable exciting cause. It consists in the sensation of a distressing anguish, which obliges the patient to sit up in bed, to cling hold of surrounding objects, and to make painful efforts to breathe. The ordinary description of an asthmatic attack is here applicable only during the relaxation phase; expiration is slow, prolonged, but not wheezing; rarely sibilant and sonorous rhonchi are audible to auscultation, and the paroxysm is not followed by expectoration. Vomiting often precedes or follows the attack; the latter may last half an hour or even an hour and be repeated several times during the day and night.

Uræmic dyspnœa is, in general, much benefited by the exhibition of drastic purgatives.

The *circulatory disturbances* observed in uræmia consist in palpitations more or less intense of the heart or even of the blood-vessels. These irregular and intermittent palpitations are felt during rest, and are often aggravated by movement. They are a frequent cause of insomnia. The pulse is ordinarily accelerated during the crises of uræmia, although it may be preternaturally slowed, as before puerperal or scarlatinal convulsions; here we should interpret the phenomenon as due to a perturbation in the innervation of the vagus.

The *cerebral accidents* of uræmia affect the three great functions of sensibility, movement and intelligence, which are singly or simultaneously disturbed.

The sensory disorders consist in subjective sensations of pruritus, of numbness and of pain in different parts of the body; lastly, in temporary visual disturbances.

The pruritus is especially observed in patients whose renal lesions are dependent on generalized arterio-sclerosis, and as this latter alteration is always linked to troubles of the innervation, we may well ask if the itching is not rather the effect of the general morbid state which engenders the renal affection than of this affection itself. These itching sensations have for their more special seat the genital organs.

Other morbid sensations are those formications and pricklings of the limbs which are observed especially in arterial nephritis, and which may be due to an imperfect sanguineous irrigation. The only *articular* pains which it is possible to ascribe to uræmia are those erratic, flitting pains of the Brightic, and which yield to purging; these evidently originate in the nervous system, and not in any material disorder of the joint. To the same category belong those painful cramps of which some patients complain, and which are seated preferably in the muscles of the leg.

As for the *digitus semi-mortuus* phenomenon (the dead-finger sensation), which is by some writers ascribed to uræmia, it is a symptom common to the neuropathic and atheromatous.

Cephalalgia is an ordinary symptom of uræmic poisoning, and appears in the form of a simple headache, or of pains which bear a great resemblance to migraine. The first of these forms is continuous, with paroxysms which may come on in the daytime, but oftener supervene in the night. Moreover, nocturnal exacerbations are almost pathognomonic. The pain has for its seat sometimes the frontal region, sometimes the occipital, and reveals itself by a sensation of horrible discomfort, of weight, of pressure, rather than of painful lancinations. It is rarely located in the temporal region; oftener it occupies the entire head, and is compared to a hoop encircling and compressing the cranium, or a tight and heavy helmet.

The intensity of the headache (causing outcries), joined to the nocturnal paroxysms, reminds one of the osteocopic pains of syphilis. If in doubt, the result of treatment will sometimes clear up the difficulty; the antisiphilitic treatment (iodide of potassium, minute doses of calomel) will be found inefficacious, while a few purgative doses of Carlsbad salts will give speedy and magical relief.

The *migrainous* form is intermittent, and supervenes by crisis of a duration which varies from several hours to several days. Sometimes unilateral, it is oftener frontal. The pains are of a rending, grinding, crushing, compressing character; arterial beatings (aggravating the pains) and lancinations (so common to migraine) are rarely complained of. The pain is exceptionally accompanied with nausea and vomitings.

Vertigo is a symptom which is quite often observed in uræmia; it is not always, however, due to uræmic poisoning, being frequently dependent on a morbid state of the cerebral arteries.

Amaurosis sometimes accompanies the uræmic crisis, appearing suddenly at the onset, continuing through the attack, and disappearing with it. The vision is obscured or even almost abolished; objects appear as through a mist. It is the result of a simple functional disturbance. Diplopia, hemiopia and even hemeralopia have also been noticed.

Cophosis is also an occasional symptom of uræmic poisoning.

The *motor disorders* of uræmia are less complex than the sensory. They manifest themselves under the form of contractures, convulsions, and even of paralyses.

Contracture is relatively rare. In the majority of cases, when present, it is fugacious and associated with a transient paralysis or with eclamptic paroxysms. When isolated, it is generally localized in the muscles of the back of the neck, causing a stiffness and a slight bending backward of the head; this is frequently strongly suggestive of meningitis.

Convulsions represent the most common type of the motor disorders of uræmia. They are partial or general. Partial convulsions consist in muscular twitchings, sub-sultus tendinum and convulsive shocks resembling electric shocks. General convulsions strikingly resemble the epileptic seizure; they are known under the name of uræmic eclampsia, of which puerperal convulsions are the type. Uræmic eclampsia with general convulsions is exceptionally met with in interstitial nephritis linked to general atheromasia, while at the same time persons suffering from this form of nephritis form the majority of the uræmic.

Uræmic paralyses affect generally a great number of muscles, and are confined to one-half of the body (uræmic hemiplegia). They ordinarily appear in the course of nephritis dependent on arterio-sclerosis. This kind of paralysis succeeds a pseudo-apoplectic attack. The case is supposed to be one of cerebral hemorrhage; but if the patient dies, the autopsy discloses only atheroma of the vessels of the encephalon. When the patient survives the attack, he is found to be hemiplegic; but to the surprise of his medical attendant this "wears off" after a few days: the patient regains perfectly the use of his members. Later on there comes another attack on the same side or on the opposite side. Such pseudo-apoplectic attacks are not rare in aged persons affected with arterial nephritis. Raymond, Chantermesse and Tenneson, besides Lancereaux, have reported cases of the kind.

Aphasia is rarely witnessed in uræmic poisoning; when supervening, it appears at irregular or periodical intervals, and is transitory.

Uræmic coma is relatively common. It is generally associated with other uræmic manifestations; it succeeds convulsions and frequently accompanies paralyses; but in some cases it remains isolated, constituting the sole disorder. There are all grades in the depth of the somnolence; sometimes the patient lies in a state of semi-consciousness for entire days, replying in monosyllables when spoken to in an earnest tone of voice. Seated in his arm-chair or lying in bed, generally a prey to a painful dyspnœa, the patient utters complaints or groans when he awakes, and speedily relapses into his hebetude.

At other times the coma comes on suddenly, and is much more pronounced. The patient is struck down with an apoplexy, and becomes insensible to all excitations; his face is pale, the pupils are immovable, the pulse is slowed, the respiration irregular, sibilant or stertorous, sometimes puffing. Muscular resolution is then general, the limbs when raised fall back flaccid, as if they were paralyzed. Death may take place during a first attack. (Edema of the cerebrum is sometimes met at the autopsy, but it may be lacking; or the patient may come out of his coma, manifest some hebetude and obtusion of the intellectual faculties, but respond to questions and take nourishment; then, after a few hours, a day or two, or even several weeks, he again lapses into the same apoplectic inertia, and may have several such attacks before he dies.

The diagnosis is always difficult in cases of this kind. The absence of reflexes speaks in favor of uræmia. The examination of the urine and the state of the temperature have a great semeiological importance and a real value from the point of view of prognostic and therapeutic indications.

Uræmic madness or delirium is a rare symptomatic manifestation of renal insufficiency. When it makes its appearance it is generally in the course of interstitial nephritis, especially of that form which is dependent on arteriosclerosis. Uræmic delirium has, however, been witnessed in scarlatinous nephritis, and it is probable that many observations of puerperal mania belong to this category.

When uræmic delirium is associated with other troubles, nervous or digestive, it is habitually mild, calm and transient, rather than noisy and persistent; hence it may pass unperceived, and generally it has but a secondary importance.

If, on the contrary, this accident is the predominant phenomenon and sums up in itself all the uræmic disorders, it is more pronounced, and presents particular characters which it is absolutely necessary to know well. In fact, it is not enough that there should be delirium and a renal lesion to constitute *uræmic insanity*; this delirium should have a special behavior which distinguishes it from other forms of delirium.

Rarely it bursts forth all at once; almost always it is preceded by insomnia, change of disposition, by melancholy or by impatience, by headache or dyspnœa, or other signs of urinary insufficiency. It is active, boisterous, rather than depressive; hence its type resembles acute mania.

Hallucinations, when they exist, affect sight or hearing, and are rather terrifying than gay. The patients believe that plots are formed to injure them, to poison them, and in certain cases they refuse all food.

Uræmic delirium has remissions and paroxysms, rarely a uniform and continuous progress. It may last for months; but its duration is ordinarily shorter—a few weeks or only a few days—and, like the convulsions and coma of uræmia, it generally kills the patient unless it is met by the appropriate treatment. Patients affected with it have frequently been sent to asylums and put under restraint. This is bad practice, and may be followed by fatal results.

Uræmic delirium presents serious diagnostic difficulties, arising from the morbid predispositions which in an albuminuric patient, as in any other person, may be awakened by various exciting causes. It is conceivable that an alcoholic patient affected with renal lesion may be taken with a delirium absolutely foreign to this lesion. It is the same with an individual who has antecedents of insanity in his family; hence it is important to have clearly in mind the characters of uræmic insanity if one would arrive at a correct diagnosis. These characters may be summed up as follows: Appearance of the delirium generally after well-known uræmic phenomena; maniacal exaltation with general incoherence, which may disappear at the end of several days or end in a dementia of short duration, in coma, or, lastly, in death. We have here, then, a grave disorder, which we should know how to diagnosticate in order to treat it properly and to avoid the disaster of committing to an asylum the unfortunate victims of this form of mental alienation.

E. P. H.

TRISMUS NEONATORUM.

As to the question of cause, in this disease, or in that of tetanus, it has been shown by a number of observers that the tetanus of adults is dependent upon a special bacillus, commonly present in unhealthy surroundings. Peiper, in a recent number of the "*Deutsch. Archiv. f. klin. Med.*" stated that he had found the tetanus bacilli in the umbilicus of children dead of trismus, and that he had been able to produce tetanus in mice by inoculating them with parts of the umbilicus of the dead children. It was formerly thought that trismus neonatorum was in some way connected with trauma of the umbilical cord or umbilicus, but these recent investigations place this disease in the same category with the tetanus of adults. As a prophylactic, the author urges thorough antisepsis in the treatment of the umbilicus and cord.

B. M.

CLINICAL.A CASE OF INSANITY APPARENTLY DUE TO
PELVIC ABSCESS, AND CURED BY SURGI-
CAL TREATMENT.

In this case, recorded by C. M. Hay, M.D. ("*Med. Record*," Nov. 18, 1890), an elaborately systematized single delusion, which, prior to operation was firmly fixed, after it, slowly faded and finally disappeared. The delusional belief arose gradually during the invasion of her pelvic trouble, and was attended by other evidences of insanity. The abscess itself could only be attributed to an indefinite traumatism received a short time prior to her illness. Coincidentally with its development, mental symptoms appeared which at first were mental confusion, with stupor and apathy, and a condition of semidementia, with a few maniacal outbreaks. In two weeks these symptoms passed away, leaving her dull and depressed, and with a few simple delusions. One of these delusions developed and became thoroughly systemized and fixed, while the others faded away, so that at the time of operation she was practically sane, with the exception of this single delusion (*viz.*, that her physician was Jesus Christ). From the character of this delusion and the positive manner in which she reasoned to prove its reality, chronic mental degeneration was feared, but after two months, general improvement came on and terminated in complete mental and physical recovery.

A. F.

CONTAGIOUS EPILEPSY.

Dr. Emil Arnson, in the "St. Petersburger medicinische Wochenschrift," describes two cases of epilepsy, the peculiarities of which seem to place them in the same category with those previously reported by Dr. R. Wichmann, whose cases had occurred as an hysterical epidemic, an imitative impulse, caused by seeing a patient taken with a sudden epileptic seizure. It seemed reasonable, to the author, to attribute such an epidemic to psychical contagium occurring in persons predisposed to neurosis. Dr. Arnson's cases were two sisters, servants, of a highly hysterical type. Previous to the attack in the first girl, the sisters had had a violent quarrel, which was followed by a typical epileptic seizure in one of them, the other sister being present, and attending during the attack. Several hours later the author was called to see the second girl and found her in a condition identical with that of her sister's seizure of the morning.

B. M.

ABSCESS OF BRAIN FROM MIDDLE EAR
DISEASE.

("St. Louis Courier of Medicine," Oct., 1890.) Robert Barclay, M.D., reports the case of a man aged thirty-two, whose illness began with earache, lasting several weeks, on the left side, followed by pain over the entire left side of face, scalp and neck, vomiting, convulsions and death. On post-mortem there was found a sac adhering to the tegmen of the petro-mastoid antrum, collapsed, and pus flowing out of it into the cavity containing the sac in the softened brain substance in the left temporal lobe. The early history was somewhat obscure and the patient was not seen until long after the trouble had passed the stage for operation.

A. F.

A CASE OF HEMIPLEGIA AND HEMI-ANÆSTHESIA ON THE SAME SIDE AS THE LESION.

The following case is reported by Caccioppoli (Gli Incu-rabili, Nos. 19 and 20, 1890; Gazzetta Degli Ospitali, Dec. 7, 1890):

A mason, 34 years old, fell from the fourth story of a house, sustaining a fracture of the right parietal eminence, for which trephining was practiced. Several days after the operation he recovered consciousness and no paralysis was

noticed. There remained a slight depression in the parietal region. The patient soon returned to his work and continued well until November 21, 1889, when he began to have sharp pain in the soft skin at the seat of the injury. This was followed by weakness of the right arm and leg, accompanied with fever and chills. On the 29th of November he entered the hospital, and examination gave the following results: Over the right parietal eminence was a swelling as large as a hen's egg, tender to pressure. The intelligence was normal. There was complete loss of sensibility to touch, temperature and pain over the whole surface of the right half of the trunk and of the right arm and leg. There was no reaction to the strongest stimuli. On the left side, sensibility was greatly exaggerated. The muscular power of the right arm and leg was much diminished. There was no change in the muscles of the face, eyes or tongue. Vision was normal, taste and smell were abolished on the right side, not affected on the left; hearing was less acute on the right side. The patellar reflex was lost on the right side, diminished on the left. The diagnosis of abscess was made. When the abscess was opened it proved to be of no great depth. The floor of the cavity was composed of cartilaginous tissue, which could be depressed in the centre. The sides were firmly attached to the surrounding bone. Caccioppoli attributed all the symptoms to the compression exercised by the abscess. He therefore simply dressed the wound and allowed it to heal by second intention. A few moments after the operation the hemiplegia and hemianæsthesia disappeared completely.

Caccioppoli considers the case interesting because of the following features:

1. Hemiplegia and hemianæsthesia on the same side as the lesion.
2. Hemiplegia and absolute hemianæsthesia through a lesion limited to the cerebral cortex.
3. Cutaneous sensibility completely abolished by a lesion of the cortex and with no disturbance of vision.
4. Intense hyperæsthesia of the opposite side.
5. Diminution of the patellar reflex.

Caccioppoli admits that some of the above phenomena are very difficult of explanation. He reports the case, however, as a clinical contribution to the physiology of the brain.

J. W. B.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of March 3, 1891.

The Vice-President, DR. B. SACHS, in the Chair.

AN HEREDITARY TYPE OF MOTOR TABES.

DR. PHILIP COOMBES KNAPP, of Boston, read a paper with this title. The case forming the subject of his remarks was one of muscular atrophy, occurring in a man thirty-four years of age. The trouble had commenced with fibrillary twitchings in the muscles of the right thigh, followed by weakness and atrophy. There were no sensory disturbances. Faradic excitability was lost and galvanic excitability diminished, and the contractions were slow, but there was no change on formula. The disease had progressed steadily, both legs becoming helpless and atrophied. The fibrillary twitchings finally appeared in the muscles of the shoulder and upper arm. There was a history of a kick in the right thigh, not of a very serious character, a few months before the onset of the symptoms. There was also a history of a peculiar affection in the patient's mother's family, of which the mother and at least four others in preceding generations had died. The affection was marked by paralysis of all the limbs, and in no case had there been atrophy. All the attacks had come on in middle life. The case reported was regarded as of spinal origin, and it was thought that the family disease was also spinal. In connection with this case, an instance of typical Aran-Duchenne atrophy, beginning in the thumb muscles, was reported, the patient's brother having died of a similar trouble. A case of progressive atrophy with bulbar symptoms was also cited, dating from a fall on the elbow.

DR. W. R. BIRDSALL said that the history detailed in the paper of Dr. Knapp had brought to his mind numerous cases of traumatic tabes, in which accident had developed some local, sensory or motor neuroses, a good many years before the usual types of symptoms of tabes were determined. Still, he did not think that the pathology of these cases was at all clear. There was little doubt, however, that a slight traumatism might form the point of origin where there already existed a family taint or a condition of the spinal cord favorable to the development of tabes. In the case cited by the author of the paper there were indications approaching traumatic tabes and time might develop other symptoms of myelitic disease.

DR. E. D. FISHER admitted that the injury might have had its influence. The hereditary cases were likely to have a mixed form of spinal disease with motor symptoms of involvement of the posterior columns with the class of symptoms of sensory tabes. Such a case as the one reported might be looked upon as one of hereditary disease.

The CHAIRMAN said that while the suspicion of hereditary trouble in the author's case was great, still the traumatism was a factor which could not be overlooked; and this, with the hereditary predisposition, might have acted as an exciting cause. The symptoms pointed to the myelopathic form of the disease, with fibrillar tremor and characteristic degeneration. They had all seen cases of progressive muscular atrophy which had begun in the leg without any hereditary history. With further observation of the case under discussion, the question could be tested whether the symptoms presented any new type of the hereditary form.

DR. KNAPP thought the question of sensory tabes in his case was hardly worth consideration, the occasional pains in the leg being the only sensory symptoms.

A CASE OF SPASTIC PARAPLEGIA. COMPENSATORY GAIT.

DR. BIRDSALL presented a child with a history of spastic paraplegia, which had supervened upon a severe instrumental delivery at birth. He had thought the case of interest because, while the child was only affected on the right side, which caused it to walk upon the toes of the affected foot, it so adjusted the position of the other foot as to secure a kind of compensatory gait, which enabled it to get about with more or less facility.

DR. F. PETERSON said the case appeared to him to exhibit symptoms of hemiplegia of one side and crural hemiplegia of the other side, which Dr. Birdsall considered was unaffected, or in other words, a partial diplegia. There was certainly considerable adductor spasm, with cross-legged position and exaggeration of reflexes, with contractures of the feet. He had seen a large number of cases of spastic paraplegia, in which one arm was involved, in addition, but without entire diplegia.

The CHAIRMAN thought that the child had sufficiently marked symptoms of diplegia, except that the left arm and the left leg were not much involved. The knee-jerks were exaggerated on both sides. It seemed to him that the difference between the two sides was that the contractures on the left side had relaxed and that the child had consequently learned to use the leg a little better than the other.

CLINICAL AND PATHOLOGICAL OBSERVATIONS ON INJURIES
OF THE CERVICAL AND SPINAL CORD.

This was the title of a paper by DR. C. A. HERTER. The histories of five cases of injury to the spinal cord was detailed. The first four were all examples of severe crushing; the fifth was an instance of injury to the cervical vertebræ, with relatively slight damage to the nervous structures in this region. Among the most interesting features of these particular cases were their bearings upon the localization of the functions of the cervical cord. In Case I. there was an upward extension of the motor paralysis, from the interossei and flexors of the fingers, to the extensors of the fingers and wrists, the pronators and supinators, the triceps, biceps, and deltoids, successively. In Case II. the order of advance was much the same. In both cases the anæsthesia occupied the body and legs below a V-shaped line across the upper part of the chest, and the inner half of the arms, forearms and hands. While the motor symptoms progressed upward in both cases, the area of anæsthesia made no advance. When the patients were first seen, they presented essentially the same motor and sensory phenomena, namely: weakness of the hand muscles, and the distinctive anæsthesia above mentioned. The cord-lesion was the same in both cases, *i.e.*, complete crushing at the eighth segment, and partial softening of the seventh and sixth segments. There was no doubt that the peculiar distribution of the anæsthesia was due to the crush of the eighth segment. In both cases the bone lesion was a fracture dislocation of the sixth upon the seventh cervical vertebra. In three of the four cases, there was pressure of the displaced or fractured vertebræ upon the cord at the time of the operation or autopsy. In all total transverse lesions of the cord, and especially in those of the cervical and lumbar enlargements, certain symptoms were referable to the damage of the cord as a central organ, as opposed to those symptoms which depended on the obliteration of the functions of the cord as a conductor of impulses. These symptoms in the cervical region included loss of power and cutaneous sensibility, muscular atrophy, and degenerative electrical reactions. In two of the cases (IV. and V.) there were abdominal symptoms worthy of note. In each case, on the day after admission, the abdomen became tympanitic, exceedingly tender to pressure, and repeated vomiting occurred, the vomitus being at one time of a greenish color. The abdominal distention became very great, but began to subside, together with the pain and tenderness and vomiting, in the course of a few days. The temperature in cases of

injury to the cervical cord varied much according to the severity of the damage. The last feature of these cases to which it was desired to call attention was the state of the reflexes, especially that of the knee-jerks. The superficial reflexes, cremasteric, plantar and abdominal were commonly lost from the beginning, in cases of complete crush of the cord, but a day or two sometimes passed before they were all lost. If the patients survived for several days or a week, some or all of the superficial reflexes returned. In all four of the cases of complete crush of the cervical cord, the knee-jerks were abolished, from a very early period after the accidents which caused these crushes respectively. The motor and sensory paralyses below the level of the lesion were complete, and in all the termination was fatal. It might safely be concluded that when bilateral loss of the knee-jerks follows immediately upon a sudden lesion of the cervical cord, we had to deal with a case of extensive and total transverse damage to the cord, and that the patient would die from it. It was not urged, of course, that this diagnostic and prognostic sign should be used to the exclusion of other associated conditions. These considerations led to one important practical conclusion, namely, that cases of crush of the cord, presenting complete or considerable paralysis of motion and sensation below the lesion and associated with loss of knee-jerks, should not be operated upon.

DR. KNAPP said that the point brought forward by the reader of the paper upon the question of the inhibitory suppression of the knee-jerk was of interest, as he had advanced the same idea many years ago. His case had been one of transverse myelitis, but not of traumatic origin. Entire absence of knee-jerk had been observed. Some weeks after, when the irritative processes had ceased in the lower portion of the cord, there were very pronounced exaggerations of the knee-jerks, with ankle and patella clonus.

DR. FISHER said it was a question whether, if the lesion was not destructive, but simply of an irritative character, there would be a loss or an exaggeration of the reflexes. He thought that the irritation must be very severe indeed to give rise to loss of knee-jerk.

The CHAIRMAN said that the phenomena connected with the loss of knee-jerk were quite different in cases of chronic cervical injuries. Its sudden abolition was entirely restricted to these cases of traumatism.

DR. HERTER said that cases were on record of slow inflammatory processes resulting in loss of knee-jerk, but he had never seen such a case.

Book Reviews.

THE NEW MODEL ANATOMICAL MANIKIN—A Once-Folded Series of Charts. Published by Fowler & Wells, of New York.

These colored charts are well adapted for ready reference as to the relation of parts, and will be found useful and in all respects accurate. They are undoubtedly valuable to the students of anatomy, and should find a prominent place in the lecture-room of schools and colleges. Accompanying each set is a carefully prepared index. There are 102 parts or sections, and conveniently arranged by letterings and numbers, so that by reference to the index one can readily find the appropriate name for any muscle, nerve, artery or part of any organ. The arrangement of the manikin is so nicely accomplished that it can be unfolded and studied by degrees, from the surface to the innermost depths of all internal organs. The whole, though simple, makes a valuable adjunct to the practical study of anatomy, and will act as a ready reminder of the true position of any nerve, artery or muscle to the busy doctor, and aid him also in many ways to practically explain to his patient a doubtful point.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By Hobart Amory Hare, M.D. Philadelphia: Lea Bros. & Co.

Books that are to be always welcomed are those founded on a "rational basis," especially so if, with rationalism, we have conjoined brevity and completeness. To define exactly the meaning of "rational basis," we must resort to the author's own words: "Rational therapeutics at the present day does not consist in a knowledge of doses and the *materia medica*, but exists as a complex art, in which knowledge and its proper application, based on common-sense principles, go hand in hand. . . . Scientific research has so largely opened up to every one the possibility of using drugs with a distinct idea of the reason for their employment, that the writer has endeavored to bring together in a readable form the combined results of laboratory and bedside experience, thinking the time ripe for such a task." To Dr. Hare much credit must be given in trying to gather together a practical, concise and helpful therapeutical text-book. There is no question that if the student has diligently applied himself to chemistry and *materia medica*, that in Dr. Hare's work he will find all that has been learned as to the usefulness of drugs in combating disease.

There is a slight tone of empiricism and an air of dogmatism about it, but still this is more in the conciseness of the author. To teach well, one must be more or less emphatic. The author as a teacher has naturally followed this method. There is a safe side to the author's opinions; he does not hasten to recommend a remedy because an eminent authority stands alone in his opinions. He has evidently waited for a consensus of opinion, and has generally practically tested himself the results. He has divided the work in four parts.

PART I. is devoted to General Therapeutic Considerations, which are brief and to the point.

PART II.—Drugs—Alphabetically arranged.

PART III.—Remedial Measures other than Drugs, and Food for the Sick.

PART IV.—Diseases—Table of Doses and Remedies; Index of Drugs and Remedial Measures; Index of Diseases and their Treatment.

The book comprises over 632 pages. The arrangement, alphabetically, of all drugs, diseases, etc., makes the work one easy to refer to. In conclusion, we can merely repeat that "rational," concise and complete books are a desideratum. The work under consideration is certainly rational and concise. The completeness is simply a matter for endless ages to quarrel over as applied to "Rational Therapeutics." Opinions will always vary; but if a work were now prepared and published as to the precise therapeutical value of drugs, one would take but a short time to peruse it.

There is, undoubtedly, a happy medium of laying aside one's personal prejudices, accepting the opinions and experiences of other minds, which can be seen has been the course pursued, happily, by Dr. Hare; and although, therefore, at times emphatic, yet just in always giving a drug its full merit. Criticism as to shortcomings in this regard would be empiricism. The author has done his best, and the result is meritorious.

BOOK NOTICES.

J. B. Lippincott Company will, beginning with April, issue quarterly thereafter a work entitled "International Clinics." This work will comprise the best and most practical clinical lectures on medicine, surgery, gynaecology, pediatrics, dermatology, laryngology, ophthalmology and otology delivered in the leading medical colleges of this country, Great Britain and Canada. These lectures have been reported by competent medical stenographers and thoroughly revised by the professors and lecturers themselves. The object of the work is to furnish the busy practitioner and medical student with the best and most practical clinical instruction in concise form. Each volume will consist of over 350 octavo pages, illustrated with photographic reproductions of important cases.

BOOKS RECEIVED.

DISEASES OF THE NERVOUS SYSTEM. By William A. Hammond, M.D., and Græme M. Hammond, M.D.

X. INTERNATIONALER MEDICINISCHER CONGRESS, Berlin, 1890.

DIE HEIL- UND PFLEGEANSTALTEN FUER PSYCHISCH-KRANKE DES DEUTSCHEN SPRACHGEBIETES IM JAHR 1890. Von Dr. Heinr. Laehr. Mit geographischer Karte.

MODERN ANTIPYRETICS. By Isaac Ott, M.D.

A DERMATOLOGICAL BIBLIOGRAPHY. Compiled by George Thomas Jackson, M.D.

THE POST GRADUATE CLINICAL CHARTS. By Wm. C. Bailey, M.D., and J. H. Linsley, M.D.

REPORTS, PAMPHLETS, ETC., RECEIVED.

TRANSPLANTATION OF TISSUE FROM LOWER ANIMALS TO MAN. By A. M. Phelps, M.D. Reprint.

SEVERE CONTINUOUS CEPHALALGIA AS AN EARLY SECONDARY IN SYPHILIS. By William Browning, M.D. Reprint.

THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF MULTIPLE NEURITIS. By George J. Preston, M.D. Reprint.

A CASE OF EPILEPSY WITH DOUBLE CONSCIOUSNESS. By G. R. Trowbridge M.D. Reprint.

MECHANICAL RESTRAINT IN OUR STATE HOSPITALS FOR THE INSANE. By Gros. R. Trowbridge, A.M., M.D. Reprint.

COMMITMENT AND CONVEYANCE OF PATIENTS TO OUR HOSPITALS FOR THE INSANE. By J. H. James, M.D. Reprint.

AN ANALYSIS OF THE STATISTICS OF FORTY-ONE THOUSAND FIVE HUNDRED CASES OF EPIDEMIC INFLUENZA. By Benjamin Lee, M.D. Reprint.

A CASE OF SUCCESSFUL TREPHINING FOR SUBDURAL HEMORRHAGE PRODUCED BY CONTRE-COUP. By John Homans, M.D., and George L. Walton, M.D. Reprint.

EXTRACT FROM REMARKS MADE BEFORE THE STATE SANITARY CONVENTION AT PITTSBURG, MAY 30, 1889. By Benjamin Lee, M.D.

A PLEA FOR PUBLIC HEALTH WORK IN VILLAGES. By Henry B. Baker, M.D.

A NEW OPERATION FOR SPASMODIC WRY-NECK. By W. W. Keen, M.D. Reprint.

NEPHRORRHAPHY. By William W. Keen, M.D. Reprint.

NOTES ON THE EXAMINATION FOR TUBERCLE BACILLI. By Ludwig Weiss, M.D. Reprint.

LIST OF SCIENTIFIC PUBLICATIONS FROM 1885-1890. By Burt G. Wilder, B.S., M.D.

MACROSCOPIC VOCABULARY OF THE BRAIN. By Burt G. Wilder, M.D.

FIRST ANNUAL REPORT OF THE PASTEUR INSTITUTE.

THE MIMICRY OF ANIMAL TUBERCULOSIS IN VEGETABLE FORMS. By E. F. Brush, M.D. Reprint.

PAIN. By D. R. Pelton, M.D.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

CLINICAL AND PATHOLOGICAL OBSERVATIONS
ON CASES OF INJURY OF THE CERVICAL
SPINAL CORD.¹

BY C. A. HERTER, M.D., N. Y.

THIS paper is designed to call attention to some of the more obscure conditions that are observed in cases of injury to the cervical portion of the spinal cord. The cases on which the paper is based are five in number. Of these, four occurred in the Presbyterian Hospital in the service of Dr. Chas. K. Briddon, to whom I am much indebted for the opportunity to study them.

CASE I.—The patient, J. R., was a laborer, 30 years of age. There is no family history of interest, except that his father died from a broken neck. The patient himself is well built, and has no recognizable disease, but is a confirmed alcoholic.

On the evening of November 20th, about 9 o'clock, while drunk, he fell headlong into a cellar-way, a distance of ten feet, and soon after was taken to a police-station, where he spent the night. Next morning his intelligence was clear, but he was quite unable to move, and was soon taken to the hospital.

Physical Examination, Nov. 21st—Heart and lungs normal. Pulse 50. Respiration shallow and slow, and almost wholly diaphragmatic. No dyspnœa. Temp. 98°. There is great tenderness over the cervical spine. In the pharynx is an exceedingly prominent angle, probably the body of

¹ Read before the New York Neurological Society, March 3d, 1891.

the third cervical vertebra. On cautiously moving the head laterally, and on rotation, there is distinct crepitus in the lower cervical region.

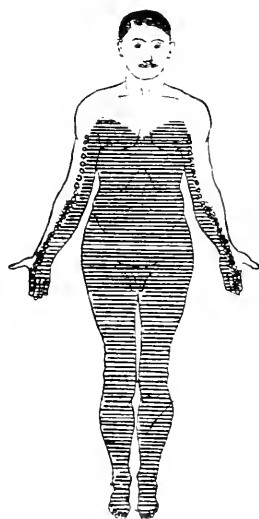
As the patient lies in bed, the forearms are flexed and the arms abducted. The fingers are somewhat flexed and the hand lies upon the chest, the fingers coming near the median line, and within three or four inches of the inner end of the clavicles. The upper extremities show a strong tendency to maintain this position; when the arms are extended by the side, they resume their original position. Below the arms the patient is completely paraplegic. In the arms the state of muscular power is as follows: Right arm, flexors and extensors of fingers and interossei completely paralyzed; flexors of wrist very paretic; left arm, flexors and extensors of fingers and interossei very weak; flexors of wrist slightly paretic. The extensors of the wrist, the biceps, triceps, and supinators and pronators and deltoids are normal in power on both sides. The biceps muscles are in a state of contracture, but the contracture can be temporarily overcome by moderate traction. When this contracture is overcome by extension, the biceps muscle becomes the seat of widespread fibrillary contractions, which continue many seconds after the extension is accomplished.

The condition of sensibility is indicated in the accompanying diagram, and requires no minute description. The loss of sensibility is to pain, touch, temperature and muscular sense, but the patient is conscious of a sensation of cold over the entire body. The pain in the outer aspect of the arm is considerable, and is greatest in the forearm and thumb. Sometimes the sensation is of an intense burning character. These irritative sensory phenomena are constant, but vary in degree as well as in character.

The knee-jerks were absent when the patient was admitted. The superficial reflexes were also abolished, cremasters, plantars, abdominals. The patient passes urine and feces involuntarily. There is distinct priapism toward evening.

The patient's intelligence has been clear since admission. Temperature at 12 P.M. 105°. Pulse 60. On morning of Nov. 22d (day after admission), temperature 104°. Intelligence clear. Breathing diaphragmatic. The extraordinary muscles of respiration are acting more strongly than yesterday. Examination on evening of the 22d gives essentially the same results as that of Nov. 23d (10 A.M.), namely, the arms maintain a position similar to that

already noted. The forearms are now supinated and elevated from the chest to the sides of the head; the arms are abducted. The extensors and flexors of the wrists are completely paralyzed; pronation is feeble, but supination is good; the triceps is weak on either side; biceps and deltoids normal. Rotation of arm perfect. No ascent in the area of anæsthesia. The upper limit of the anæsthesia and analgesia coincide closely. Irritative symptoms have ceased. There is no pain or hyperalgesia along outer border of arm and fingers. There is no muscular rigidity in biceps. No myoidema has been noted at any time.



Reflexes are absent. Priapism is marked. During the evening of the 23d the following observations were made: The only change in muscular power since morning is that both biceps are a little weak. Limits of anæsthesia same as before. Pupils equal, a little contracted, react to light and during accommodation. The left palpebral fissure seems a little smaller than the right, which is of normal size. Reflexes absent as before. Priapism has passed away. Slight irritation of the skin at any part, especially near the genitals, causes an immediate erection of the penis, which lasts for a few seconds only. Highest temperature for the day $103\frac{5}{10}^{\circ}$.

Nov. 24th.—Patient's general condition fair during morning, and poor toward evening. Highest temperature during day is 106.5° , at 9 P.M., when the pulse was rapid and feeble. The loss of power in the biceps muscles is greater than on the day previous, and there is commencing weakness of the deltoids. Pronation and supination are possible, but both movements are feeble. The limit of anæsthesia on the chest is practically unchanged. On the arms and fingers the loss of sensation has extended outward (cephalad) slightly, perhaps one-third inch. Priapism has returned. The pupils are unchanged. The cremaster reflex has reappeared.

Nov. 25th.—Temperature remains high (highest 106°), and patient is beginning to fail. Respiration 20, irregular in rhythm and force. Pulse 75, fair strength, slightly irregular. Sensibility cannot be accurately tested, because patient is mentally clouded, but there is probably no extension upward. The biceps muscles are weaker than yesterday. Pronators and supinators not distinctly weaker than before. Cremasteric reflex is present. There is no priapism. The pupils are smaller than they have been, and react only slightly to light. There is no distinct evidence of atrophy in the muscles of hand and forearm. Electrical examination gives the following results: Faradic irritability is greatly diminished in all the intrinsic muscles of either hand. There is probably some diminution in faradic irritability in the flexors and extensors of the wrist, but this is uncertain. Galvanic irritability is lost in the intrinsic muscles of the hand, with the exception of the first dorsal interosseus of the right side, which reacts feebly, and shows KCC=ACC. The flexors of either side show slightly diminished galvanic irritability, without reversal formula.

Nov. 26th.—The patient was in stupor during the early hours. Temperature fell from 106° to normal. The features are pinched, pupils contracted and eyes sunken. Pulse is small and feeble. An examination made at 9 P.M. shows no change in the distribution of the motor and sensory paralysis from that of yesterday. The reflexes are absent as before. An electrical examination of the muscles of the left arm show entire loss of faradic irritability in the intrinsic muscles of the hand, and distinct diminution in that of the flexors and extensors of the wrist. The supinator longus and pronator radii teres show no changes in irritability. There is complete loss of galvanic irritability in the hand muscles, and distinct diminution of irritability,

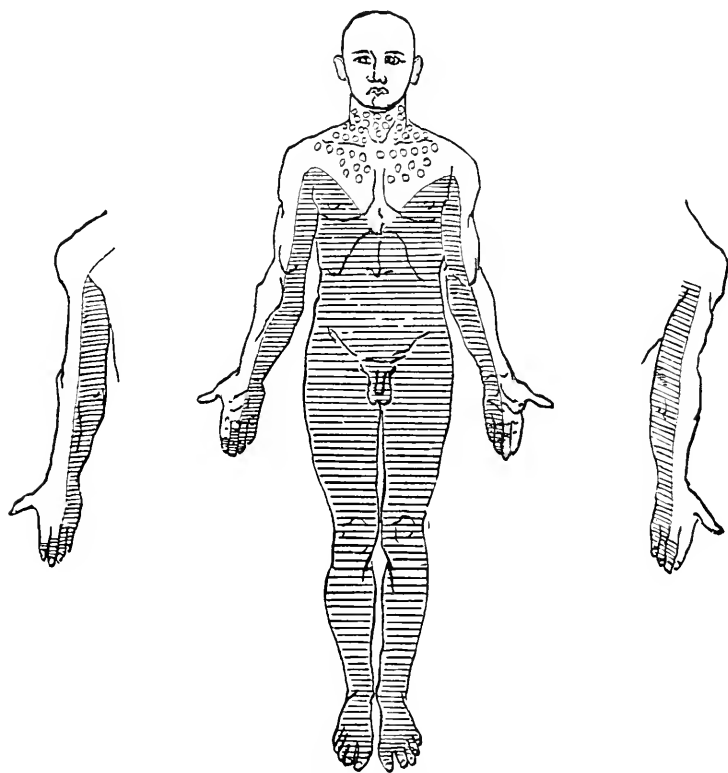
with sluggish contraction, but without reversal formula, in the flexors and extensors of the wrist.

Nov. 27th.—The patient sank rapidly, and died at 10.30 A.M. of respiratory failure.

The autopsy, made fourteen hours after death, showed a dislocation forward of the sixth cervical vertebra upon the seventh, and fracture of the lamina of the seventh on the right side. There was also found a fracture of the lamina of the second vertebra on the left side. As the dura lay exposed at the level of the dislocation it was normal in appearance, and its contents seemed of normal consistence. On opening the dura, however, the cord was found to be very much softened at the level of the eighth cervical segment, and somewhat reduced in consistence in the seventh segment. At the level of the seventh segment the central canal was slightly distended with blood. The microscopical examination gave the following results: In the eighth cervical segment the topography of the gray and white substance was scarcely recognizable, although the remains of the gray could, for the most part, be readily distinguished from that of the white. Anteriorly, on either side of the cord, was an irregular gray mass containing a few shrunken bodies that appeared to be the remains of ganglion cells. The shrunken and structureless remains of the posterior horns could readily be made out. The gray commissures were a narrow line of *débris* between the large masses of disintegrated gray substance of either side. The white matter retained more of its structural features than the gray; but nowhere could a normal fibre be seen. All showed a breaking up into larger or smaller droplets of myeline in some part of their course, or were the seat of varicosities of diverse sizes. The most striking histological feature of the cord at this level was the large extravasations of blood, which took up almost the entire gray matter and were numerous in the white. The vessels of the cord, especially those of the anterior horns, were enormously distended with blood. Considerable numbers of small spheroidal cells were present about the blood-vessels, both in the gray and white, but were not as numerous as might have been expected considering the lapse of time between the injury and death, and the consequent opportunity for inflammatory reaction. The central canal of the cord could not be detected. In its situation was a mass of blood and *débris*. Near the median line, far back in one posterior column, was a hook-shaped structure, consisting of cylindrical epithelium, derived undoubtedly from the cen-

tral canal. This was the only representative of the lining of the canal that could be detected. The nerve-roots had suffered from the crush, some bundles of fibres being partially disintegrated. It cannot be said whether the anterior or posterior roots had suffered most. Numerous small extravasations of blood were present in the nerve-roots and in the pia. In the lowest part of the eighth cervical segment the topographical arrangement of the gray and white substance is much more nearly normal. The posterior horns are, however, too near together anteriorly, and too widely separated posteriorly, and no trace of the epithelial lining of the central canal can be made out. A few ganglion-cells present a normal appearance; most of them are atrophic. The majority of the fibres in the white substance are destroyed. In the anterior columns there are a few seemingly normal fibres. Hæmorrhages are numerous in the gray and white substance, but much less so than in the upper part of the segment. There is very little evidence of any inflammatory process, and collections of leucocytes are neither dense nor numerous. The majority of the nerve-roots appear normal, but one of the roots external to the cord presents the curious appearance of having preserved many normal fibres in its peripheral portion, while its central fibres have been disintegrated. In the seventh cervical segment the changes were of the same character as in the eighth, except that they were less in degree. In the sixth segment the evidences of mechanical disintegration are slight, but both the gray and white substances show considerable evidence of an inflammatory process. Considerable numbers of leucocytes are collected in the anterior horns, and in the connective-tissue septa of the white matter. The ganglion-cells are shrunken and without processes. There are hæmorrhages both in the gray and white substance, but they are small and few compared with those further down. At this level the posterior horns are still much displaced and injured, and the central canal does not exist. The topography of the cord gradually regains its normal features as we ascend to the fifth and fourth segments, but does not become perfect until we reach the third segment, in the lowest part of which the majority of fibres and ganglion-cells appear normal. Even at this level there are some accumulations of leucocytes about the vessels, and some small extravasations both in the gray and white substance, and the central canal is filled, though not distended, with blood. Above this level the cord soon becomes normal.

CASE II.—This case has already been elsewhere¹ recorded, but without the results of a microscopical examination. It may be very briefly summarized as follows: A man, aged 57, fell head first, a distance of twelve feet. On being brought to the hospital, he was found to be paraplegic below the arms, and to have paralysis of the intrinsic muscles of the hands. There were anæsthesia and analgesia below a V-shaped line across the upper part of the chest, and, roughly speaking, in the inner half



==== Area of Anæsthesia and Analgesia.

oooo Area of Hyperalgesia.

of the arms, forearms and hands. Respiration was diaphragmatic. The knee-jerk, cremasteric, abdominal and plantar reflexes were abolished, and urine and fæces were

¹ Journal of Nervous and Mental Disease, January, 1890.

passed involuntarily. The paralysis spread successively to the flexors and extensors of the wrists and the triceps, and there was some loss of power in the biceps, supinators, pronators and pectoralis major muscles. The sensory loss remained stationary. The patient died after forty hours, and there was found to be a dislocation forward of the sixth cervical vertebra upon the seventh. The seventh and eighth cervical segments of the cord were much softened, and the left anterior root of the eighth nerve was torn across. The microscopical examination of the eighth, seventh and sixth segments of the cord makes it evident that the damage to the cord in this case was far less severe than in Case I., though the changes are essentially the same in character.

In the lowest part of the eighth segment there is only slight deviation from the normal outlines of the gray and white substance, but the majority of the ganglion-cells are atrophied and without processes. Many nerve-fibres, especially those of the posterior columns, are disintegrated, and the central canal, with its epithelial lining, cannot be recognized. There are numerous hæmorrhages in the gray substance, but the area occupied by extravasations is much smaller than in the cord from Case I. The hæmorrhages in the white substance are also relatively slight in this cord. Many of the fibres in the white substance have a morphologically normal appearance, but their axis-cylinders stain very imperfectly with carmine. In the upper part of the eighth segment the changes are more marked than in any portion of the cord. The gray substance is much broken up, the central canal is destroyed, hæmorrhages are extensive and numerous, and there are small collections of leucocytes about the vessels, especially those of the gray substance. Above this level there is a gradual return to normal structure. In the sixth segment there are many normal ganglion-cells, and the majority of the fibres of the white substance are unchanged. The central canal is greatly distended with blood.

The following case of crush of the upper cervical cord is presented with the permission of Dr. McCosh, who operated upon it. From a neurological point of view the history is somewhat imperfect, but it illustrates several important points.

CASE III.—Andrew Gunn, age 69 years; widower; plasterer. On July 12, 1890, while at work on an unfinished

building, he fell three stories, striking his head and left side against a board flooring. Patient was found in shock, and taken to hospital. On admission, patient's condition was as follows: Temperature $97\frac{3}{4}^{\circ}$. Pulse rapid and feeble. Respiration diaphragmatic and labored, the extraordinary muscles acting. Examination gives crepitus in the fourth cervical vertebra, over which region there is great tenderness. No information could be obtained regarding the existence of paralysis until several hours after admission, when the patient began to recover consciousness, and it was ascertained that all four extremities were completely paralyzed. Sensation was abolished below a line crossing the chest at the level of the third rib. No accurate observations were made of the area of lost sensibility or of the exact distribution of the motor loss, but the arms appear to have been completely paralyzed. The cremasteric, plantar, abdominal and patellar reflexes are quite abolished. There is incontinence of urine and fæces. An operation was thought to be indicated, and revealed a fracture of the lamina of the third cervical vertebra on the right side. The cord is said to have been badly crushed at this level, and the dura torn. The operation took place at 1.45 P.M., and death occurred at 7.30 P.M.

CASE IV.—Mary Jacobus. aged 35, fell from the fifth story of a tenement-house, through the dumb-waiter shaft, on Sept. 29, 1889. Examination shows transverse fracture of spine of scapula. Distinct retro-pharyngeal projection, causing some dyspnœa. Persistent pain over second, third, and fourth cervical vertebræ, increased by manipulation. Complete loss of power below neck. Anæsthesia below a transverse line three inches beneath clavicle. Total abolition of reflexes, both superficial and deep. Mental state clear. Retention of urine; incontinence of fæces. Temperature on admission 99° , subsequently varied between 101° and 105° . Respiration diaphragmatic.

Sept. 30th.—Patient is unable to keep anything on her stomach; persistent vomiting. Marked distention of whole abdomen. The vomited matter is greenish, and much resembles the vomitus of peritonitis.

Oct. 1st.—There was a diaphragmatic spasm lasting several minutes, during which the patient became cyanotic. The motor and sensory paralysis continue stationary. A thorough examination made under ether reveals distinct crepitus over fifth and sixth vertebræ.

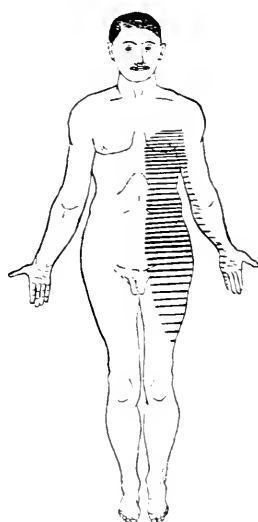
Operation decided upon. Operation at 3.15 by Dr. Briddon. Incision in median line from a point one inch

below occipital protuberance to vertebra prominens. After cutting through the post-vertebral muscles, the right lamina of the fifth cervical was found freely movable, and was removed, together with the spinous process of the same vertebra. The left lamina of the sixth vertebra and the corresponding spinous process being depressed, both were elevated and removed. The connective tissue lying upon the dura mater was gently lifted, and a small longitudinal rent could be seen in the dura mater, through which the substance of the cord protruded. The cord at this level was contused and softened, and there was a free escape of cerebro-spinal fluid. The wound was dressed, and two superficial sutures were put in place to approximate the margins of the wound and hold the gauze in place. An aseptic compress was put over this and a plaster-of-Paris jacket bound over the whole. The jacket extended from the parietal eminences to the lumbar region, and was made to conform to the shape of the body. The patient was put to bed and stimulated; but she became delirious, and died at 9.45 P.M. Temperature immediately after death, 108°

Autopsy.—Considerable congestion of peritonæum. Intestine tympanitic. Ecchymotic spots one inch in diameter in peritonæum of ascending colon. Body of sixth cervical vertebra is slipped a little forward on the fifth. The cartilages on both sides of it are crushed, and there is a sagittal fracture through the body. The cord is crushed, softened, and a little hæmorrhagic at this point. The fifth and sixth spines and parts of the laminæ were removed.

CASE V.—J. S., aged 67, fireman, has always been in good health. On the morning of Feb. 9, 1891, he fell from the head of a stairway a distance of twenty-two steps, and when picked up soon after was in a dazed condition. He had been drinking the night before. Soon after he fell the patient was admitted to the hospital. On admission the patient's temperature was 99°; pulse 80, full, regular; respiration slow and regular. He suffered at this time from acute pain in the region of the sixth lower cervical spines. No fracture or displacement of the vertebræ could be made out. Over the fifth, sixth and seventh vertebræ there is great tenderness on pressure. An examination, made during the afternoon of the 9th, shows that the flexors and extensors of the wrist are all but paralyzed on the right side, and that the flexors and extensors of the wrist of the left side are much weakened. The intrinsic muscles of the

right hand are quite powerless; those of the left hand are only partially paralyzed. On the trunk, extending as high as the nipple on the left side, is a large area of altered sensibility, in which there is slight tactile anæsthesia and entire loss of sensibility to pain and temperature. These changes in sensibility exist both in front and behind, and extend to within one inch of the median line. As one passes over the trunk toward the lower extremity, the analgesia grows gradually less marked, and fades out into normal sensibility on the thigh in front and upon the buttock behind. The condition of sensibility is represented in the accompanying diagram. It will be noted that the diminished sensibility



extends along the inner border of the arm upon the hand. Nowhere upon the arm was sensibility entirely absent, and the anæsthesia (to touch, pain, temperature) fades into the normal before the median line of the arm is reached. The lower extremities were repeatedly examined with reference to their power, and at no time could any loss be made out. The reflexes were all normal, except the knee-jerk of the left side, which was increased. There was also ankle-clonus on the left side. On the morning after admission there was marked tympanites and the abdomen was tender to pressure. The distention increased very much during this and the following day, and the patient vomited dark

greenish matter repeatedly. The temperature remained normal. In the course of three or four days the distention subsided.

The anæsthesia remained as described for about three days. Then it grew gradually less pronounced, until, at the end of ten days, sensibility was normal on both sides of the body. The anæsthesia disappeared first from the arm. There was an improvement in power, but the recovery was partial only. Seventeen days after the accident the intrinsic muscles of the left hand had recovered power and the extensors were much improved. On the right side there was slight improvement in the flexors and extensors of the wrist, but scarcely any in the intrinsic muscles of the hand. The forearms were not measured, but it is believed that at the end of seventeen days there was more atrophy than could be accounted for by simple disease. The muscles of the forearm, especially the flexors, became very flabby. The atrophy of the interossei was very distinct. Within the first week an electrical examination was made. No changes could be made out in the muscles until ten days had passed, when there was slight diminution to faradism in the flexors and extensors of the forearms. Subsequently there was very little change in this respect, the diminution in faradic irritability remaining slight. The first examination with galvanism was made on the sixteenth day, and showed simple diminution of irritability in the muscles that were the seat of diminished faradic reaction. Nothing positive can be said concerning the electrical state of the interossei. Two days after the injury, ankle-clonus could not be obtained on the left side, and on the fourth day the knee-jerk seemed no longer increased. The patient was heard from six weeks after this was written and is said to have received full power in the arms.

Observations.—The case just recited differs in kind from the first four cases whose histories have been read, in that it is an instance of relatively slight damage to the nervous structures of the cervical region. As regards the localization of the damage, certain things are very clear and others are equally obscure. The loss of power limited to the forearms and hands can be explained only on the supposition that there is a bilateral nerve-root lesion, involving, in all probability, the roots of the sixth, seventh and eighth nerves. The damage to these roots must be slight in

degree, as there was no evidence of even commencing degenerative electrical changes in the muscles at the end of seventeen days. The peculiar distribution of anæsthesia upon the trunk and left arm cannot be satisfactorily explained. The limits of the lost sensibility upon the chest and arm of one side recall the area of loss in the first and second cases of this paper, and suggest that pressure upon the right half of the cord may be responsible for it. The objections to this view of the case are, first, that there is no loss of power in the leg of the side of this supposed cord-lesion, and, secondly, that there was for a time an increase in myotatic irritability on the side of the anæsthesia. The first four cases that have been recorded are all examples of severe crushing of the spinal cord, and have many clinical features in common. They differ somewhat in the localization of the cord lesion, to which their symptoms are due, but may nevertheless be regarded as constituting a distinct clinical group—complete cervical paraplegia from sudden total transverse destruction of the cord at a certain level. Many of the more striking symptoms of these cases are already sufficiently well known, and these will not be discussed. But there are other features of this class of cases that are less well known and understood, and it is especially to these that attention is invited. Among the most interesting features of these particular cases are their bearings upon the localization of the functions of the cervical cord. In Case I. there was an upward extension of the motor paralysis, from the interossei and flexors of the fingers to the extensors of the fingers and wrists, the pronators and supinators, the triceps, biceps and deltoids successively. In Case II. the order of advance was much the same, namely, intrinsic muscles of the hand, flexors of the wrist, extensors of the wrist, pronators, supinators and biceps. In both cases the anæsthesia occupied very nearly the same regions, namely, the body and legs below a V-shaped line across the upper part of the chest and the inner half of the arms, forearms and hands. While the motor symptoms progressed upward in both cases, the area of anæsthesia made no advance in the first case, and very little in the second. When

the patients were first seen they presented essentially the same motor and sensory phenomena, namely, weakness of the hand-muscles and the distinctive anæsthesia above mentioned. The cord-lesion was essentially the same in the two cases—that is, complete crushing of the eighth segment and partial softening of the seventh and sixth segments. We are justified in attributing the peculiar distribution of anæsthesia to the crush of the eighth segment. In both cases the bone-lesion was a fracture-dislocation of the sixth upon the seventh vertebra. In three of the four cases there was pressure of the displaced or fractured vertebræ upon the cord at the time of operation or autopsy; in one case (Case II.) there was very slight displacement only, at the time of the autopsy, a degree of displacement quite inadequate to account for the damage sustained by the cord. We are quite justified in believing that in some cases of crush there is merely a momentary displacement of the bones, followed by a springing back into place or nearly into place. Of course, in these cases the original displacement is readily reproduced at the autopsy or even during life.

In all total transverse lesions of the cord, and especially in those of the cervical and lumbar enlargements, certain symptoms are referable to the damage of the cord as a central organ, as opposed to those symptoms which depend on the obliteration of the functions of the cord as a conductor of impulses. These symptoms in the cervical region include loss of power and cutaneous sensibility, muscular atrophy and degenerative electrical reactions. It is more than probable that in Cases I. and II. the loss of power in the hands and the distinctive distribution of the lost sensibility in the arms are referable to the blotting out of the cord's central functions in the eighth cervical segment. That this is true of the loss of power in the hands is made certain in the case of our first patient by the fact that changes in the electrical reactions of the hand-muscles were detected shortly before death. A slight degree of atrophy also was apparent in the hand-muscles (*interossei* especially), and both the electrical reactions and the atrophy are surely

dependent on damage to the lower segment of the motor path—damage located in this instance in the eighth cervical segment. But the electrical changes just spoken of are of considerable interest in another connection. The patient in whom they were observed lived a little less than seven days from the time of the accident. An electrical examination was made on the fifth day as a matter of routine, and with no expectation of finding any alteration in the irritability of the paralyzed muscles. There was found not only greatly diminished faradic irritability in the hand-muscles, but entire loss of galvanic contractility, with the exception of one interosseus in which the irritability was diminished and associated with equality in the polar reactions. On the sixth day there was entire loss of faradic and galvanic irritability in the hand-muscles and distinct change in the forearm muscles. The nerve-reactions were not taken, and the currents used were unfortunately not measured, but both the galvanic and faradic were extremely painful and produced violent contractions in normal muscles. The observations were several times repeated each day, in order to exclude all sources of error. We are justified in attributing these alterations in muscular irritability to commencing degenerative changes in the nerves in question—changes of an intense and rapidly progressive character. It is interesting to note the entire loss of galvanic irritability in association for a short period with slight preservation of faradic contractility. It is also of interest to observe that no reversal of the polar formula was detected, although in some muscles there was a polar equality and distinct sluggishness of contraction.

The development of electrical changes in this case was considerably more rapid than any that have come to my notice. It seems not improbable that there may be some relation between the rapidity of the degenerative changes, which we may safely assume to have existed, and the severity of the lesion, than which there can be no greater.

In two of the cases above reported (IV. and V.) there were abdominal symptoms worthy of note. In each case, on the day after admission, the abdomen became tym-

panitic, exceedingly tender to pressure, and repeated vomiting occurred, the vomitus having at one time a dark greenish color. The abdominal distention became very great, but began to subside, together with the pain and tenderness and vomiting, in the course of a few days. What these symptoms—which for a time suggested a developing peritonitis—are due to, we cannot venture to suggest. In Case IV. the autopsy revealed the presence of considerable congestion of the peritoneum, marked tympanites, and numerous ecchymotic spots in the peritoneum of the ascending colon. Symptoms similar to these have been observed by me in two cases of injury to other regions of the cord. In one case there was crush of the cord in the lower dorsal region; in the other, the symptoms followed directly after an operation in the lumbar region, done many months after a hæmorrhage into the cauda equina. It is believed that other observers have not noted these symptoms.

The temperature in cases of injury of the cervical cord varies much, according to the severity of the damage. In the cases of slight injury, like Case V., the temperature may be either normal throughout, or may be slightly elevated at first. In the severe cases of crush of the cord, the temperature varies within wide limits, and apparently without much reference to the exact level of the injury. In each of the four cases of severe crush of which the histories have been recited there was a sharp rise in temperature during the first twenty-four hours. The temperature rose in one case to 105.2° , in another to 104° , within a few hours of the injury. In the cases where the patients survived the accident several days, the temperature fell from the maximum of the first twenty-four hours, in one case to normal, in another nearly to normal, to rise once more just before death, when the highest temperature was attained.

Similar temperatures have been observed in cases of injury, or operation, in the lower dorsal and lumbar regions.

It seems probable that the considerable elevation of temperature observed in these and other cases of the same

character (Thorburn's cases) is due in some way—at present obscure—to the destruction of nervous tissues, since the rise is absent or slight in cases of slight injury, no matter what may be the degree of shock or bone injury.

The last feature of these cases to which it is desired to call attention is the state of the reflexes, especially the state of the knee-jerks. The superficial reflexes, cremasteric, plantar and abdominal, are commonly lost from the beginning in cases of complete crush of the cord, but a day or two sometimes passes before they are all lost. If the patient survives for several days or a week, some or all of the superficial reflexes return, as in Case I., where the cremasterics returned on the fifth day. The abolition of these reflexes is not invariable in severe crush lesions. In slight lesions of the cord there is ordinarily no change in them.

Far more important than the condition of the superficial reflexes is that of the knee-jerks. In all four of the cases of complete crush of the cervical cord, the knee-jerks were abolished, from a very early period after the accidents which caused these crushes, respectively. In all four cases the motor and sensory paralyses below the level of the lesion were complete; in all, the termination was fatal. Two of the cases, it is true, were operated upon; but it is absolutely certain, from the nature of the damage found, that these cases would have terminated fatally if left to themselves.² Thorburn has reported a large number of cases of damage to the cervical cord, some severe, some slight. In ten of these cases the knee-jerks were lost immediately after the injury was received. In all ten, the motor and sensory paralyses below the level of the lesion were complete; in all, the termination was death. On the other hand, in a large number of cases in which the motor and sensory paralyses below the level of the injury were partial in degree or distribution, and in some of which there was recovery, there are none in which the knee-jerks were lost early. We may safely conclude, therefore,

² A Contribution to the Surgery of the Spinal Cord, 1890.

that *when bilateral loss of knee-jerks follows immediately upon a sudden lesion of the cervical cord, we have to deal with a case of extensive or total transverse damage to the cord, and that the patient will die from it.* It is not urged, of course, that this diagnostic and prognostic sign be used to the exclusion of other associated conditions. Immediate complete loss of motion and sensation below the level of the lesion are equally important indications of the severity of the lesions, and should be taken in conjunction with the state of the knee-jerks when this is practicable. In cases where the patient is unconscious, we must rely on the state of the knee-jerks alone, at least for a time. It must not be thought that loss of knee-jerk is confined to lesions of the cervical cord; it occurs in severe crushes of the dorsal cord as well.

These considerations lead to one important practical conclusion, namely, that cases of crush to the cord presenting complete or considerable paralysis of motion and sensation below the lesion, and associated with loss of knee-jerks, should not be operated upon. It would not be necessary to state so self-evident a fact but for the reason that surgeons sometimes operate on these cases "to relieve pressure," and in the hope of some day finding a case which will recover. At the present day we are able to distinguish between nerve-root lesions and crush lesions of the cord, and should limit operative procedure to the former set of cases. This does not apply to cause of simple pressure on the cord, or to partial crush with fracture or dislocation.

A phenomenon so remarkable as loss of knee-jerk from a distant cord-lesion is of no little theoretical interest. How can the abolition in these cases of a reflex dependent on the lumbar cord be explained? We cannot hope to give a fully satisfactory explanation, but we may perhaps clear up the ground to such an explanation.

Thorburn³ attributes the loss of knee-jerk to the depressing action of shock upon the reflex centres, and likens

³ Injuries to the Cervical Region of the Spinal Cord. Brain, 1887.

it to a case of temporary retention of urine, after an operation for genu valgum. This seems a very unsatisfactory explanation. Granting that shock is capable of abolishing reflex action, we must hold that it only rarely acts in this way. Most of the cases of severe concussion of the entire cerebro-spinal nervous system show no abolition of the knee-jerks; in the cases that do show it, the loss is evanescent. Again, many cases of slight injury of the cord are associated with the severest shock, and in none of these cases, so far as we know, has the knee-jerk been abolished. The duration of the effects of shock must be admitted to be short. What do we find to be the facts in our cases of severe crush? Does the knee-jerk return, and if so, when? In one of our cases the injury was survived seven days, but there was no return of knee-jerk, and there were no other evidences of shock. Thorburn states that in one case the knee-jerk returned in five weeks; but a careful reading of this case makes it questionable whether the knee-jerk was ever really lost. But, admitting that the knee-jerk may return after several weeks, we must still insist that the date of return is much too late to make shock responsible for the original loss.

Bastian,⁴ who also has called attention to the loss of knee-jerk which follows total transverse lesions of the cord, believes that loss to depend on a shutting off, by the lesion, of reflex-exciting influences passing downward from the cerebellum through the gray substance of the cord. In support of this view, a case of Thorburn's is quoted in which the knee-jerks were lost and autopsy showed a lesion (hematomyelia) chiefly of the gray substance. The idea is that in this case the reflex-exciting cerebellar influence was cut off by the lesion of the gray substance, while the supposed reflex-depressing influence continued to pass from the cerebrum by the white substance. This ingenious idea will not stand when we look carefully into the character of the case which is supposed to support it. Speaking of the findings in this case, Mr. Thorburn quotes the

⁴ British Med. Jour., March, 1890.

following: "This hæmorrhage (constituting the hæmato-myelia), which measured in its vertical extent from one and one-half to two inches, 'was in the greater part of its extent situated centrally, occupying the whole of the central gray matter, and extending but little into the white substance, which in its neighborhood was merely softened and of faintly yellow tinge.' The white substance was 'merely softened,' but we consider this an excellent reason for excluding the case entirely, as an evidence of the correctness of the above-mentioned hypothesis."

What can we substitute for these explanations? Briefly this: Whatever hypothesis we employ to explain the loss of knee-jerks, we must lean upon the idea of inhibitory influences from distant parts of the central nervous system, since the lesion in these cases is certainly nowhere in the reflex arc. We cannot throw any light on the nature of this inhibition, but we may indicate its source and character. Its source is the upper end of the undamaged lower portion of the cord.* In character it is irritative; that is, the result of active, irritating, pathological processes in the nervous structures. The evidence that the source of inhibition is in the upper end of the undamaged cord is that in some of our cases the parts above this were, for a short distance, completely disintegrated, no normal fibres remaining. The influence cannot, therefore, come from above the lesion. Immediately above and below this lesion the disintegration is less complete, and there are inflammatory changes—inflammatory changes which, though less than might have been expected, are nevertheless sufficient to produce over-action in adjacent healthy tissues. On *a priori* grounds, therefore, we might expect to find a considerable degree of over-action from irritation dependent on the parts above and below the crush. But we have additional evidence of the best kind that this is in reality so. From the upper end of the uninjured cord we can, of course, expect no definite symptomatic evidence, as we have complete paralysis of motion and sensation below the lesion. From the lower end of the upper uninjured region of the cord we get the evidence to make our case complete.

There were certainly in two of our cases, and probably in all, symptoms of an intensely irritative kind, referable to the lowest part of the upper end of the cord, namely, great pain in the arms just outside (above) the border of anæsthesia in one case, and intense girdle pain about the neck in another. Powerful contraction of the biceps also was present in one case, and this did not disappear until the paralysis ascended, from ascending inflammation of the cord. Have we not, therefore, excellent reason to assume that a similar irritative influence is exerted from just below the lesion on parts below? When we say the loss of knee-jerks is due to irritative inhibition, we are using a legitimate expression, if we use it in the sense here given, and one which indicates probably truthfully, though vaguely, the character of the influence that gives rise to this most interesting phenomenon of loss of knee-jerks.

ATROPIN AND DUBOISIN AS SEDATIVES AND HYPNOTICS.

Dr. N. Ostermayer, of Budapest (*Allg. Ztschr. f. Psychiatr.*, xlvii., 3 and 4), comes to the conclusion that atropin, used subcutaneously, in doses of 0.001 to 0.002 grammes, in the insane, exercises a sedative and indirectly hypnotic action, lacking, however, the certainty and strength of the action of hyoscin. According to him, it does not cause collapse. The patients accustom themselves to the remedy. A disagreeable side action was observed in only one case, where diarrhœa and vomiting followed its administration. Atropin often acted where morphine and hyoscin failed. The sulphate of duboisin acted, injected subcutaneously, in doses of 2 to 3 mg., as a prompt and intense sedative. In insomnia, without motor restlessness, 1 to 1.5 mg. also caused sleep. No disagreeable symptoms were noticed during its use. Its action diminishes after some time. The writer doubts the assumption of Ladenburg that duboisin is identical with hyoscyamine. He recommends duboisin instead of hyoscin, especially in cases where diseases of the heart and blood-vessels render the administration of hyoscin dangerous; also its cheapness recommends its use.

P. and P.

SYNOPSIS OF OPIUM INEBRIETY—ITS EFFECT:
NEEDED LEGISLATION; DISTINCTIVE PLANS
OF TREATMENT NECESSARY FOR THE SUCCESSFUL CURE.¹

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HE who has proven himself an attentive observer of the transactions of man for the past twenty-five years does not hesitate to pronounce the last quarter of the transpired portion of the nineteenth century the most remarkable in the history of man. The philosopher, the scholar and the philanthropist will be ready to declare that at no period in all former times have the intellectual energies of our race made so momentous discoveries or put forth such exalted plans of benevolence for the benefit of mankind. The mighty achievements in the mechanical world have given new impetus to old powers and created new ones of vast results, profitable to us as a nation and as individuals. Revelations in language, in inscriptions, in customs and laws, nations have unfolded treasures of undoubted excellence and worth, important in history and eminently subservient to profound and philosophical investigation of man; while the knowledge now possessed of nature and her laws has enlarged the domain of humanity with results of vital importance. Learning is necessarily no longer confined to the favored few, nor is wisdom locked up from those earnestly seeking. Like the rays of the noon-day sun, intellectual light beams forth from almost every countenance; instruction is easily acquired by almost every individual; knowledge unfolds herself to every inquirer. Man is more and more aware of his capabilities. "Onward" is the watchword; "progress" the spirit of the times. This is an age of investigation; the relation of cause and effect

¹ Abstract of Article presented to the American Medical Association, May 5-8, 1891.

is sought; mind penetrates everything; theories of the past are being submitted to a more searching inquiry in the crucible of the present; new truths are evolved, old ones confirmed; error and prejudice vanish before the judgment of this enlightened age. We live in an epoch full of change, alive with conflicting opinions. Need we wonder at an obtuseness in the public mind in regard to the legitimate claims of the medical profession, a want of discrimination in recognizing the genuine, and an absence of veneration for the dictates of experience? It has been hinted already that the spirit of the age is one of reform. In social institutions, in jurisprudence, in our criminal legislation and political economy, leading minds are ardently at work advancing new theories of progress. Should not the same principle be made evident in our profession? Should so vital a thing as that of the public health be neglected? Is it well that we look on with unconscious indifference at the warfare that is being waged on the life and health of untold thousands by charlatans and impostors, who vaunt their so-called cures broadcast through the medium of the press?

The newspapers and periodicals are filled with advertisements skillfully designed to extort money from victims of the opium, morphia and chloral habit. You cannot pick up a paper, be it a religious paper or not, that does not contain such advertisements. How a Christian paper or journal can be a party to such a crime as that of helping these unscrupulous fiends to make capital out of the unfortunates that are addicted to the use of opium is more than we are able to comprehend. The money to be realized from advertising for such impostors seems to crowd out all sense of right. The only way to overcome this evil is to enact such laws as will make it a criminal offence, punishable by imprisonment, to offer for sale any mixture or compound for the cure of inebriety, opium or alcoholic, or for being a party to the sale of such drug or compound, by advertising it or otherwise. Until such a law is in effect through the United States, the curse of opium and alcohol addiction will have no cure. There is no question but thousands are made

mad by the vile stuff that is offered as cures for the opium and alcohol habit. If the compound of itself does no actual harm, by reason of any powerful constituent, the disappointment, the blasted hopes, that were so elegantly colored up by the advocates of the so-called cures are enough to set one crazy when he learns that his habit has only been fed. Legislation, and legislation alone, can reach this species of fraud—once it is made a felonious act to sell or offer for sale or advertise for sale any nostrum or compound until an analysis has been made by the State Analyst and his certificate is attached thereto certifying that said compound does not contain any drug or combination of drugs that are known to enslave.

Opium addiction—is it on the increase? It may be said that opium inebriety is a disease of modern life, of recent origin. Opium eating, as it is called, has been practiced for centuries in the East; in China almost one-fifth of the entire population are addicted. Opium eating and smoking, strictly speaking, had never prevailed to any great extent among Western nations until after the discovery of morphine, in 1817. Since morphine has come to light, it has made thousands of victims; especially has the habit increased with alarming rapidity since the hypodermic syringe came into use. To-day opium, in some of its forms, holds in bonds hundreds of thousands—yes, millions—of the human race. We believe that there is no habit that is more pernicious to us, as a people or nation, than that of opium inebriety, for it takes possession more insidiously and holds on more tenaciously than any other known drug. The amount of opium coming through our United States custom-houses, as reported, does not show an increase in the consumption of opium during the past eight or ten years. There being no increase of imports does not conclusively show that no more opium is being consumed; legislation, increase of duty, have not shut out the supply. Some years ago Congress imposed a duty of ten dollars a pound on opium, with the hope that such duty would cause a decrease in the consumption of the drug. The effect has been an opposite one. The increase in price has been the means of a large

amount of smuggling through various channels; the profits so enormous. Some statistician has calculated that the gains of English opium merchants in the last half century exceeds two thousand million dollars.

Large financial interests are concerned in fostering the opium vice in the United States as well as in England, fortunes are here being made, by evading the tax imposed. We imported, and there was passed through the custom-house, according to statistics of the Treasury Department, as follows: In 1884, crude opium, containing nine per cent. morphia, 264,746 pounds; same year, for smoking, 1,066.00 pounds; morphia, 27,850.18 ounces. In 1890, 380,621.42 pounds crude, nine per cent. morphia; smoking opium, same year, 58,982.00 pounds; morphia, 19,953.50 ounces.

It is estimated that during the year 1889 alone there was something over 800,000 pounds of smoking opium smuggled into the United States; and there is every reason to believe that the amount smuggled in is perhaps double, when we consider the fact that every month three or more steamers arrive from China at the western terminus of the Canadian Pacific Railway at Vancouver's, most of them having opium on board. An average cargo, it is said, is about 25,000 pounds. A small amount may be retained for consumption in Canada; the remainder, it is said, is smuggled into the United States.

EFFECTS OF OPIUM.

There is a vast difference between individuals, not only as regards tolerance of such a poison, but also as regards the forming of the habit. Some temperaments fall almost immediately into the habit; others can use opiates for years and seem as free as though habit was an impossibility. We will, however, find victims among all classes.

Morphinomaniacs include many of our literary men, mathematicians and scientists. Medical men are more exposed to the formation of the habit than any other class. There is in his case what might almost be called a reasonable excuse for something that will quickly give relief from pain if attacked, knowing as he does the undoubted effect

of morphia to relieve pain in his hurry while others are calling him to help them. He may, and often does, insert or take a dose; business and urgent calls give him no time to consider his own case, or even how often he has resorted to the remedy, until he finds he cannot throw off the craving; a need is implanted almost without his suspecting it. Thus thousands of physicians are made slaves to the opium habit, from which they cannot free themselves unaided, for he is himself no more; all is abnormal. The normal state with an opimaniac is given in a few words: the will is paralyzed, and personality is destroyed. The opium habit is one difficult of eradication. The percentage of reformed drunkards is greater than that of opium inebriety. The drug opium, long used, becomes a necessity, and if withheld, the whole system, every cell, cries out in agony; harmony of function can no longer be maintained without opium; the whole organism has been adjusted to the new or artificial condition, in which the element of equilibrium is the poisonous drug; a sudden failure to supply the stimuli gives rise to an overwhelming craving and plunges the individual into a trying ordeal, from which there is no relief unaided, except it be by repetition of the poison and in increasing doses. It has often been said, by those having passed through the trial of abstinence, that no one else but such can tell or give the faintest idea of the suffering one experiences when trying to abstain without having been prepared for such withdrawal; against their better judgment they are driven to madness, and they seek relief by returning to the accustomed drug. It matters not who he may be, whether of the high or low or of what caste, he finds he is indeed a slave to a habit over which he has no longer control; self-control is a lost factor with him. Opium inebriates tell us but one story: that they are no longer free.

Opium inebriety is truly a disease. There is brought about molecular changes; a neurosis is produced, amounting to a necessity for the continuation of the drug until a preparatory stage is passed, during which time sedative drugs are used and the system thoroughly aroused and the reflex sensibilities anticipated by such medication as will

displace and tone up the paralyzed functions. The mental faculties are among the first that suffer from the use of opium: as melancholia, hallucinations, especially of sight and of dread. Sometimes the opposite is the case: instead of sadness or depression, there is excitement or mania; vertigo is common. With some, insomnia is of frequent occurrence—perhaps wakeful all night and sleepy during the day. Sensation is generally impaired or perverted; in most cases there is a state of anæsthesia, which largely accounts for the painless punctures with the syringe. Upon the digestive organs, morphia exercises sometimes a peculiar influence: if administered hypodermically, it sometimes develops an appetite for a time, when, if taken by the stomach, it destroys all desire for food, and not infrequently brings about nausea and vomiting. Upon the bowels the paralyzing effect is marked. A large proportion of persons are obstinately constipated while they continue its use; abstinence brings about diarrhœa. Many patients are also troubled with dysuria, and pass only a few drops at a time; the kidneys seem to be paralyzed and do not perform their functions well; general nutrition suffers from the paralyzing influence. Those addicted to opium grow old fast; their eyes grow dull, face is without expression, skin becomes yellow and generally greasy.

Abstinence.—There is a state of disquiet; an uneasiness, a state of agitation comes over the individual, if his dose is long deferred and the system is long deprived of the stimulant, a sense of discomfort takes hold and he is restless and irritable. The highest effects of the abuse of opium are developed in the abstainer. Among the marked symptoms are diarrhœa, which can always be expected if the opiate is suddenly withdrawn; and if it does not come on, the patient should be watched, for he is probably deceiving you, shamming.

Diagnosis.—You are generally struck by the strange appearance and expression of this class of people, the wan complexion, the vacant look, together with a dullness, listlessness, with marked lowering of the physical as well as moral status; functions of nutrition are profoundly

affected, with generally a loss of appetite and obstinate constipation. The most reliable method of diagnosis, and one that does not require acknowledgment on the part of the patient, is the examination of the urine. Morphine is eliminated by the kidneys, and can be found in the urine; and when found, you are absolutely certain that the habit exists. Examination from day to day is a part of my method for the detection of deceit on the part of the patient. Of course it must be taken into account that the alkaloids of opium are not all eliminated for some eight or possibly ten days after commencing to abstain. By analysis of the urine we have a certain means of knowing the condition of our patient.

TREATMENT—DISTINCTIVE PLANS.

There are some three or more plans or methods. First is the abrupt withdrawal or suppression, practiced by the somewhat noted German, Dr. Livenstein, and by many others after him. The plan is simply to take away the drug at once, without any preparation whatever or regard as to dose. Experience has taught thousands that the use of morphia or opium cannot be suddenly stopped without serious results following. The abrupt withdrawal entails too much suffering of mind and body and a risk of suicidal ending; collapse is threatened on every hand. Such a method is barbarous, uncalled for and inhuman; any one subjecting a person to such cruelties should be held for malpractice. Dr. J. B. Mattison, of Brooklyn, one of our ablest American writers, a man of considerable experience in this line, has, upon several occasions, expressed himself as bitterly opposed to the abrupt withdrawal, and holds that no man is warranted in subjecting his patient to such torturing ordeals. We are aware that the Livinstein method has its advocates even to-day, and some are high in the profession. We are of the opinion of Prof. Bartholow, when he says after one such an experience that he could not be induced to repeat it, if for no other reason than strictly humanitarian reasons, since the mental and physical sufferings are truly horrible. The dread of the told-of-sufferings that one has to undergo keeps hundreds under the yoke of habit. The im-

pression is broadcast over the land, that to quit it is to entail upon themselves tortures beyond the endurance of almost any ordinary person.

A second method is the rapid withdrawal, but not abrupt. Dr. Mattison advocates this method, and it is generally a safe one to pursue. The plan consists of first producing a certain amount of sedation or control of the reflex irritation present. Dr. Mattison, in his monograph on the treatment of opium addiction, says the use of sodii bromide is, so far as he is aware, original with him in connection with the treatment of opium reflex irritability. We have found in it the safest and most valuable sedative in such cases for many years, our attention being first called to the effect of bromide of sodium and its probable action in the reflex disturbances following the withdrawal of opium from the human system by the lamented Dr. Beard. In using bromides to counteract and to get desirable results, it requires large doses and for some days—from four to six days. The system needs to be constantly under the influence for such a length of time as named before an attempt is made to withdraw; in other words, the maximum sedative effect of the bromide should be secured by the time the maximum nervous disturbance is expected or brought about by withdrawal of the opium.

The rapid withdrawal is in some respects the most desirable of either of the three plans, sudden, rapid or gradual: better than the first from the fact that the system is saved the severe shock of the first and the necessarily longer time of the latter; and were it not a fact that many cannot even endure without severe trial and suffering under the rapid method, I certainly would rigidly adopt such a plan; but the gradual, with me, seems to meet more constitutional conditions than either. Gradual withdrawal is the easier plan, and the one most likely to succeed in the largest percentage of cases. It is to us the most logical, from the very fact that the habit is gradually formed. Certain conditions and changes were produced gradually; therefore it is rational to gradually withdraw or undo.

NECESSARY MEANS TO SUCCESS.

It is indispensable that the patient place himself under the care of one familiar with the work, one that has studied

the conditions that are likely to arise during the period of abstinence. Opium addiction, it matters **not how** used, produces radical changes in the system. A neurosis is produced amounting to necessity for the continued use of the drug; the demand for opium is so imperative as to place the consumer wholly beyond the power of resistance unaided. The principal difficulty we encounter in treating those addicted to the use of opium is that they have lost about all their will-power or self-control—in fact, confidence in themselves. They have a disease that impels an increase rather than the power to diminish the doses. Repeated attempts to abandon the use of opium have proved to them their utter inability to even diminish the dose. Therefore there is but one road leading to a cure: the only remedy or reasonable chance or plan that offers any assurance of a cure is to place themselves under the care of a specialist in the work. In the hands of a conscientious practitioner, who, from contact, study and close attention to each patient's peculiar needs can best provide for every emergency, opium inebriety (or eating, as it is called) is a vincible disease and curable—the person, being otherwise constitutionally strong and free from organic disease, having an earnest desire to be cured, it matters little as to the extent or time used; nor need there be any dread of the hard ordeal to be passed through, that has been pictured as worse than death; these are days of rational medicine, of humane and scientific methods.

A special institution designed for such cases is the proper place, where appropriate arrangements are made for the care of each person, with provision for carrying out the best method for each particular case. Certain symptoms and conditions have to be met promptly when they do arise. In some instances a collapsed condition threatens, which is best met by stimulants of ammonia or alcohol. In extreme cases a hypodermic dose of morphia is a necessity for the time. Delirium can be warded off by coca, chloral and bromides. Vomiting: omit food of solid character, and give hot beef extract, hot milk, beef peptonoids, in liquid form. Medicine: ammonii ar., spir. bismuth sub. nit. Diarrhœa: clear out the *prima-viæ* first by an emulsion of ol. recine

with spir. Galcii; then give bismuth sub. nit. and zinc sulpho-carbolate. Pains in the legs treat by hot foot-bath, massage and friction. Sleeplessness, restlessness: be sure, first, that your patient is not shamming; then give full doses of bromide and sometimes ammonii valerianate in the elixir form. Where sleeplessness comes without pain, I believe we have in the new drug, sulfonal, a most excellent sleep-producing agent, being tasteless is easy to administer. Sulfonal-Bayer is truly a hypnotic. In doses of from ten to twenty grains it does not derange the appetite or digestion, and does not seem to have any effect on the renal secretions; acts in from one to three hours, and the effect lasts from five to seven hours. In insomnia from pain it is of no value. From our present therapeutic knowledge of sulfonal we think it not advisable to give it in increased doses from day to day; rather, if necessary to give it nightly, give diminishing doses. Codea is a preparation of opium that can be given to allay pain as safely as any of the opiates and without any great liability to formation of habit. In cases presenting anæmic conditions, iron and strychnia are proper. If any notable depression or prostration of any considerable duration, alcoholic stimulants are demanded. Restlessness and insomnia are frequently warded off by the hot bath before the hour of retiring. Electricity is useful in almost all cases, and many times will tranquilize the system, especially the electric bath.

Among the essentials that are positively needed, if you would succeed, is mental quietude. Opium and chloral cases need be in an atmosphere of tranquillity, away from all exciting causes; lively diversions and pleasant company are desirable. The patient should, first of all, select a healthful place, with cheerful surroundings as practicable, and, above all, place himself or herself in the care of one in whom they have confidence. Once in the institution, no more information should be imparted as to when or how they get rid of the opiate. If the patient is one that uses the hypodermic syringe, a change should be made at once; the syringe must be discarded, and all opium must be taken by the mouth.

COMPARATIVE TEST OF A CHLORIDE OF SILVER DRY CELL AND AN ACID CELL.

By G. A. LIEBIG, JR., Ph.D.

ALTHOUGH every one who has ever used an acid battery is well aware of the fact that it is not a constant source of electricity, and, moreover, that even when an open circuit, its electro-motive force is subject to a continual and sometimes rapid diminution; still I have thought it might be interesting to make a comparative test between an ordinary acid battery and a chloride of silver cell, and exhibit the results in such a way that their great differences in this respect could be seen at a glance.

With this object in view, an acid battery of five cells was joined in circuit with a resistance box and an ammeter, a voltmeter being also in metallic connection with the terminals of the battery. The battery was of the ordinary zinc-carbon-chromic-acid form, the size of the zinc plate being about $3 \times 1\frac{3}{8}$ inches, and the chromic acid solution being made up, of water—5 pints; sulphuric acid—7 fluid ounces; chromate of potash—8 ounces.

The voltmeter was not continually in circuit. Only when a reading of the electro-motive force was taken was this the case the circuit being made by means of a push button with which the voltmeter was provided. Both the voltmeter and mil-ammeter were of the Weston type and had, only a few days previously, been received from the manufacturer's laboratory.

Fig. 1 shows the manner in which the various pieces of apparatus were connected. *B* is the battery of five cells; *R* is the resistance box or rheostat; *MA*, the mil-ammeter (always in circuit); *VM*, the voltmeter, and *ww*, etc., are the wires or conductors completing the circuit. The voltmeter and ammeter were placed at a distance apart sufficient to insure complete absence of any disturbing effect of one on the other—a precaution, which, however, for ordinary purposes, is unnecessary, as the Weston instruments are practically unaffected by surrounding magnetic conditions.

Frequent observations of the current, as well as the e. m. f. were made during the day, the values tabulated, and from these, curves were plotted, which are shown in Fig. 2.

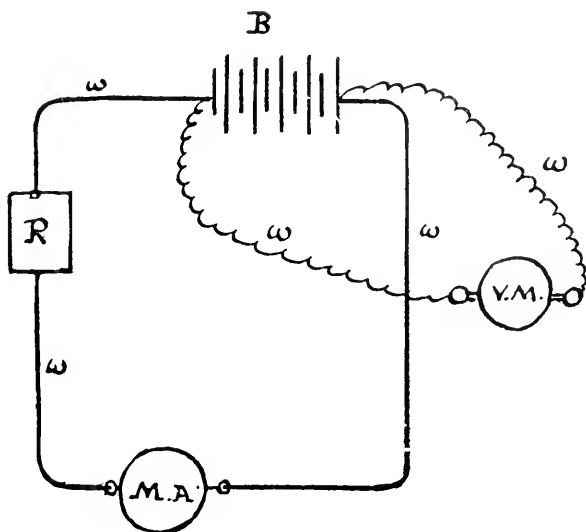


Fig. 1.

Curve *A B C* was constructed from the values of current furnished by the chloride of silver cell, curve *D E F* having been similarly constructed for the acid cell. As

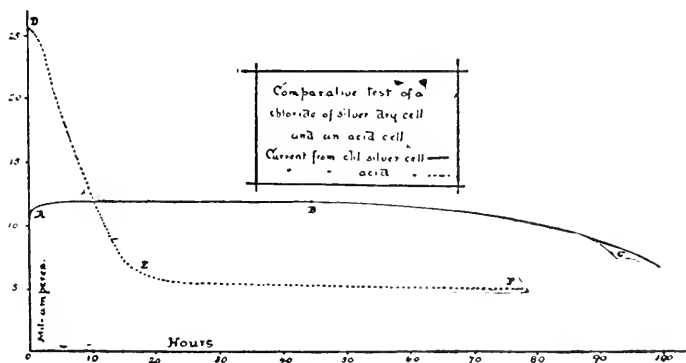


Fig. 2.

the size of the zinc plate in the latter was at least five or six times as great as that of the chloride silver cell, the resistance in circuit was adjusted so as to make the current from the acid battery about $2\frac{1}{2}$ times as great as that from the chloride silver battery. The resistances, however, in both cases was not changed during the test, but remained always the same as at the outset.

A glance at the curve shows how very different the batteries behaved. Starting at nearly 26 m. a., the current from the acid battery began at once to diminish, and after ten hours had fallen below that of the silver chloride cells. After twenty hours of service it had diminished to between five and six mil-ampères, which value was subject to but little subsequent change.

During this time the electro-motive force fell from 1.80 volts per cell to 0.32 volts. After twenty hours' service the e. m. f. was 0.37 volt, so that, practically the battery was then useless.

After being in circuit about eighty hours, the battery was disconnected and allowed to recuperate. The recovery was insignificant, amounting to only about 0.12 volt per cell.

The curve, *ABC*, shows that the current from the silver chloride cell, starting at about 10.2 m. a., gradually increased until it reached the value 12.0 m. a., after which it remained practically constant until the cells had been in operation for about seventy-five hours. This rise in the current, as well as in the e. m. f. (which for these cells is almost exactly one volt), is due to the gradually diminished internal resistance of the cells, consequent upon the conversion of chloride of silver—a comparatively poor conductor—into metallic silver, a very perfect conductor. The change is, however, small, and could be avoided by short-circuiting the cells for a few minutes—a proceeding which is not advisable. The theoretical capacity of these cells, calculated from the weight of the chloride of silver contained in them, is about 1000 mil-ampère hours, and the curve shows how nearly the actual life corresponds with that given by theory.

TRAUMATIC LESIONS OF THE SPINE, OCCASIONED BY RAILROAD AND OTHER INJURIES: THEIR ETIOLOGY, PATHOLOGY AND TREATMENT.¹

BY THOMAS A. MANLEY, A.M., M.D., NEW YORK.

THE essayist on this subject, dealt with the subject from a surgical standpoint exclusively, and, among other things, spoke with special emphasis on those lesions occurring in the various regions of the spine which may induce crippling effects, *without* any association or implication of the elements of the cord; noteworthy among which are those neuroses arising from injury of the peripheral nerves, the vascular ligamentous, osseous, synovial, or tendinous structures.

A most careful survey was made of the anatomical architecture, the physics of spinal movement, and the complex and intricate physiology of function was most minutely analyzed and exhaustively considered.

Dr. Manley, at the very outset, took the ground that as an etiological factor, in spinal injuries, a railroad accident possessed nothing peculiar or characteristic; that there was nothing from a psychological or physical standpoint, *ing to support* the assumption that there was, or ever can be, *anything*, entitled to the designation of "railroad spine." He maintained, that in the cases cited by Erichsen, in defence of his theory, there was not a scintilla of proof that the railroad accident was in any way responsible for the neuroses which he set down as being dependent on it. He maintained that the clinical histories alone very strongly indicated this. In the first place, because it appears that his female patients were hysterical, and the men were of a

¹ Abstract of paper presented to American Medical Association, at Washington, May 5 to 8, 1891.

neurotic tendency. Besides, it is a well-known fact that serious organic lesions of the medulla spinalis are almost invariably either incurable or fatal. So many of Erichsen's patients recovered, that no opportunity was offered to demonstrate pathological changes by autopsies.

On the other hand, Dr. Manley said, that his experience in dealing surgically with traumatic lesions led him to accept unqualifiedly the dictum of Dr. B. A. Watson, of New Jersey, viz., that "in serious injuries of the spine, the local and constitutional symptoms resulting were always in direct proportion to the extent of spinal lesion and pathological changes existing after the accident."

In discussing the pathological mutations observed after a severe injury to the cord, followed by hemorrhage, congestion or inflammation, Dr. Manley said, there was almost invariably associated with spinal injury very severe pain in the back; the tissues overlying the vertebræ being thickened, indurated and œdematous. This was easy to explain, when the vagaries and peculiarities of the rachidian circulation were borne in mind; and, besides, it aided in elucidating the *modus operandi* of secondary spinal infection, wherein the first brunt of the injury is borne by the soft parts; but later, meningeal trouble arises from infection, being propagated through the lymphatics or centripetal vessels inward.

In considering the question of spinal hemorrhage, he said a wrong impression commonly obtained in connection with the pathology of this subject; first, with respect to the source of the hemorrhage; and, secondly, its situation.

It had been said that the effused blood was arterial, and that it was always intra-meningeal. The speaker said, as a matter of fact he had always found the blood venous and coming from the meningo-rachidian veins. Its situation when in sufficient quantities to compress the cord was always external to the dura, but within the theca. Next to direct bone pressure, he had found spinal hemorrhage the most prolific cause of meningitis, through long-continued pressure and irritation.

Numerous cases were cited, from the author's own practice, illustrating the various phases of injuries to the spine resulting from railroad collisions: blows, twists and falls on the spine; of the latter, in a few in which the patient fell, the brunt or the momentum, being borne by the nates, and others, in which force, primarily, was borne by the head, neck or shoulders.

The main drift of the article, however, was evidently directed toward calling attention to those lesions arising primarily or secondarily from injuries to the back of an extrinsic origin, those designated according to the structure involved and the grade or variety of pathological process present, such as myopathies, neuropathies, trophic and amyotrophic changes, cellulitis, osteitis, periostitis, synovitis, arthritis, ulceration or suppuration.

Myelitis as a primary disease following spinal injury was denied.

The writer maintained, that it was only after the circulation was impeded by inflammatory changes and that the nutrition of the cord was seriously compromised, that its nerve-cylinders and cellular elements underwent degenerative changes and softening.

Spinal anæmia, as a sequence of spinal injury, likewise was denied with emphasis.

It was claimed that this disease had no pathological foundation whatever; that there was no proof of the existence of a local diminution of the quantity of blood in the spinal cord, when other organs were amply supplied, but that, as in cerebral anæmia, it could occur only as a permanent condition when there was constitutional anæmia; either by the local abstraction of blood or its general impoverishment, by influences acting on the general economy; the treatment of it by ferruginous and restorative preparations thereby indicating its real nature, so that, instead of being a primary, local malady, it was simply the index of reduced health.

In approaching the subject of diagnosis, Dr. Manley strongly insisted on the importance of proceeding with great circumspection; inquiring cautiously into the patient's gen-

eral history and being on the alert for any trace of syphilis, particularly if the patient were young and the interval of time was considerable from the date of injury and the onset of symptoms.

Physics, independent of electricity, affords little positive aid in the diagnosis of spinal disease, as in many of the worst cases there is no deformity, distortion, fullness or atrophy; while not infrequently we will see the most marked displacement of the bony structures without any marked impairment of function in the cord.

We have not space to give at length more than an outline of this very valuable brochure of spinal traumas, which we are certain will be read with profit by any one required to practice railroad surgery or treat mechanical lesions of the spine.

INFLUENZA AND APHASIA.

In the "Edinburgh Medical Journal," August, 1890, Thos. Dobson Poole reports a case of aphasia during an attack of grippé. The patient was seized with shivering, giddiness, violent headache; complained feeling queer; was given brandy, and put to bed. The next day could not speak, but when asked how she felt, pointed to her head. Later in the day could say "yes." Temperature 102.2°. Next day seemed to understand all that was going on. Temperature 100°. She continued to improve, and in a few days she could say the names of all her children except one, to whom she pointed in giving a wrong name. The headache lasted some time, even after the patient was able to go down stairs. What was the tangible condition of the speech centres it is difficult to say. It would appear that in some aphasic states, when the power of saying names or nouns is returning, patients are able to speak the names and nouns they have learned most recently, as in the case of this woman, who failed to call her nurse and sisters by their right names, but spoke those of her children correctly.

L. F. B.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

*From the Swedish, Danish, Norwegian
and Finnish:*

FREDERICK PETERSON, M.D., New
York.

From the German:

WILLIAM M. LESZYNSKY, M.D., New
York.

BELLE MACDONALD, M.D., New York.

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:

JOHN WINTERS BRANNAN, M.D., New
York.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo,
N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport,
Mass.

*From the German, Italian, French and
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F. H. PRITCHARD, M.D.

ALBERT PICK, M.D., Paris, France.

From the English and American:

A. FREEMAN, M.D., New York.

From the French and German:

W. F. ROBINSON, M.D., Albany.

ANATOMICAL.

A STUDY OF THE DECUSSATION OF THE NERVE FIBRES AT THE OPTIC CHIASM.

In the Archiv f. Psychiatrie, Bd. xxi., Hft. 3, A. Delbrück reports the results of autopsy upon an insane patient seventy years of age who during life, had never manifested any visual defect—neither ophthalmoscopic nor visual tests having been made. The *left* optic nerve was found completely degenerated, while upon the *right* side only one-half of the nerve was similarly affected. The *left* non-decussating bundle was degenerated, as well as nearly all of the crossed and commissural fibres. Only the *right* non-decussating bundle was found normal. These findings may be used as a new proof against the theory of a total decussation of the optic nerves at the chiasm. The non-decussating fibres run through the nerve in thick strands, and course mostly on the lateral side of the nerve as a distinct group. In the chiasm and in the optic tract they gradually intermingle with the decussating fibres, but in such a manner that they do not spread themselves over the whole of the transverse section of the tractus, but leave

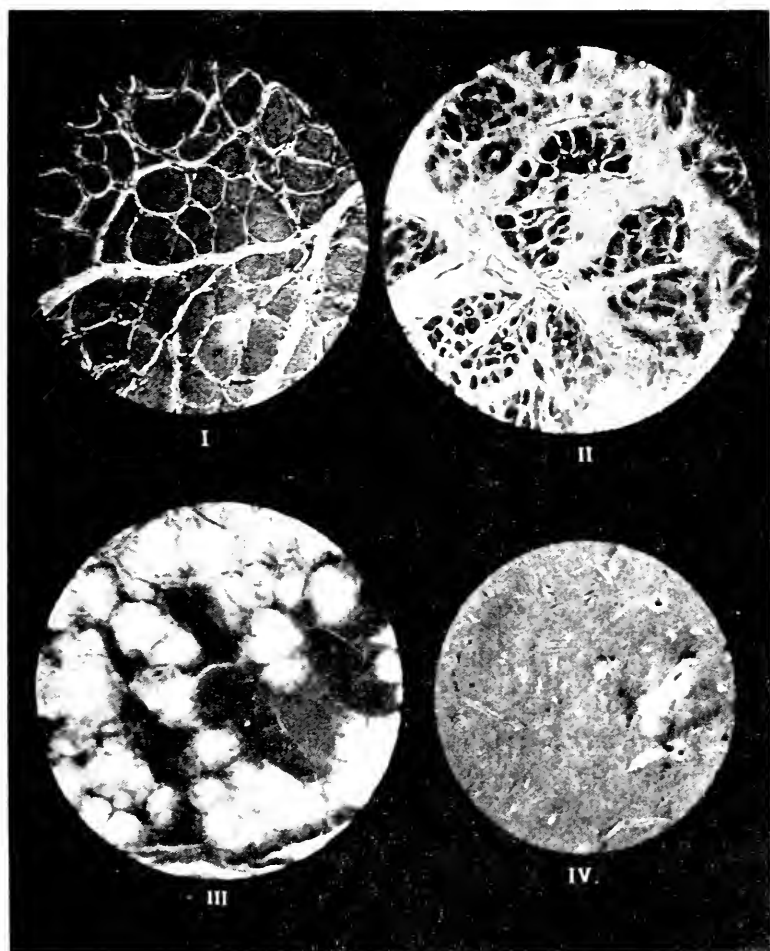
free, first, the lower internal quadrant, and later, a zone at the free border of the tract, which gradually diminishes. He next enters into a detailed analysis and refutation of Michel's theory of the total decussation and ascending degeneration. As these theories have been attacked from other quarters, and are almost universally looked upon as exploded, we will forego the reproduction of this portion of his paper. The writer then reviews the entire literature of the subject, and concludes that a definite opinion cannot as yet be formulated as to the relative position of the decussating and non-decussating fibres. The various statements only agree in this, that the non-decussating fibres course in the nerve in the form of a more or less isolated bundle. In regard to the course of the fibres in the tract, the statements are quite contradictory. The majority of authors have expressed themselves in favor of the more or less isolated course of the non-decussating fibres in the tract also. Despite the difference of opinion as to their position, it may be asserted that the course of the decussating fibres corresponds more with the free border of the tract, while the non-decussating fibres course more in the interior. The morbid specimen before us speaks in favor of the gradual intermingling of both kinds of fibres in the tractus as above mentioned. (Centrbl. f. klin. Med., No. 4, 1891.)

W. M. L.

PATHOLOGICAL.

MUSCULAR ATROPHIES.

In the April number of the "Buffalo Medical and Surgical Journal," Dr. Wm. C. Krauss, of Buffalo, makes a clinico-pathological study of the different forms of muscular atrophies. Muscular atrophy is described as a retrogressive change taking place in the muscular fibre, causing a diminution in its bulk and substance, thereby rendering it incapable of performing its normal physiological function. Muscular atrophy must not be confounded with hypoplasia or aplasia, on the one hand, nor the physiological atrophies, as active atrophy, passive atrophy and local atrophies, on the other. A short historical sketch, followed by the histology and pathology of the muscular fibre follows. The pathology of the simple degenerative form and fatty infiltration and degeneration of the muscle, as in lipomatosis, is taken up at some length. The subjective and objective symptoms are carefully taken up, and particular attention is called to a tape measure applicable in these cases, de-



FOR EXPLANATION OF PLATE SEE PAGE 357.

scribed by the author in the February number, 1890, of this Journal.

The classification, which the author states is merely a compilation after the different authorities based upon anatomo-pathological investigations, embraces all forms of atrophy, and is here given in full.

MUSCULAR ATROPHY.	Physiological.	Active.	{	Senile wasting.
			{	Diminished nutrition.
			{	Defective assimilation.
		Passive.	{	Febrile processes.
			{	Direct traumatism, etc.
	Pathological.	Funcitio-lesio.	{	Anchyloses.
			{	Surgical appliances.
			{	Hysterical contractures, etc.
	Pathological.	Neuropathic.	{	Spontaneous, secondary, traumatic, etc.
			{	Toxic.
			{	Infective processes.
	Pathological.	Arthritic.	{	Scapulo-humeral. (Erb's juvenile form.)
			{	a. Facio-scapulo-humeral. (Landouzy-Dejerne.)
			{	b. Peroneal. Leyden's Hereditary form.)
		Myopathic.	{	Paralysis pseudo-hypertrophic.
			{	Acute. { Poliomyelitis acuta infantilis.
	Pathological.		{	Poliomyelitis acuta adultorum.
			{	Hand type. (Duchenne-Aran.
			{	Peroneal type. (Charcot Tooth.)
			{	Amyotrophic lateral sclerosis.
			{	Syringomyelia.
	Pathological.	Myelopathic.	{	Gliomatous growths.
			{	Locomotor ataxia.
			{	Multiple sclerosis.
			{	Diffuse myelitis.
			{	Myelo-myelitis, etc.
	Pathological.	Chronic.	{	Deutero-pathic.
			{	Cerebropathic.
			{	Cerebral palsies. { Hemiplegia.
			{	Diplegia.
			{	Paraplegia.

The pathological atrophies are either atrophy of inaction (funcitio-lesio) or tropho-neurotic. Erb's juvenile form (scapulo-humeral) is taken as the type of the myopathic atrophies, and Leyden's hereditary and the facio-scapulo-humeral types are regarded as sub-forms. In the spinal atrophies are classed the Duchenne-Aran and Charcot-Tooth types—one the hand type, the other the peroneal type.

EXPLANATION OF PLATE.

FIG. I.—Cross-section of a normal muscle. Zeiss E objective, No. 1 eyepiece.

FIG. II.—Simple degenerative atrophy of a muscular fibre. Zeiss E, No. 1 eyepiece.

FIG. III.—Fatty infiltration and degeneration of a muscular fibre. Zeiss E, No. 1 eyepiece.

FIG. IV.—Destruction of the antero-lateral group of ganglion cells, anterior cornua gray matter, spinal cord. The ganglion cells to the left (antero-median) are intact, while the antero-lateral have been replaced by cicatricial tissue. Zeiss E, No. 1.

The illustrations are reproductions of micro-photographs (by the author) taken from specimens exhibited before the club.

OXALURIA AND NERVOUS STATES.

Dr. Neidest (*Münchener medicinische Wochenschr.*, 1890) regards oxaluria as constituting a disease and not a symptom. His conclusion is based upon two cases which he observed, one of which is especially notable. An individual, fifty years of age and the son of a diabetic father, was, without any known cause, seized with oppression, anguish, palpitation of the heart, insomnia, symptoms of accumulation of fat around the heart, tremor, choreiform agitation, stammering, sudden jerking movements of the legs, dyspeptic symptoms, etc. He also suffered from polydipsia, polyuria, and to a remarkable degree from oxaluria (500 mgrs. of oxalic acid per litre instead of 20). His gastric digestion was normal. The impossibility to refer the totality of the symptoms to any classified disease caused the writer to regard the condition in question as a primary oxalæmia of nervous origin, due to a perversion of nutrition. All the causes which have been observed in similar cases were wanting; as, for example, excessively vegetable diet, the use of certain medicines (coca, scilla and rhubarb). Perhaps the prolonged abuse of soda water might have had an influence in developing this state. The affection has a long time been quite bearable, but the treatment has had but slight effect (diet, hydrotherapeutics and galvanic electricity). The writer confirms his views by several experimental observations. P. and P.

THE TRAUMATIC NEUROSES.

Among twenty-four cases of traumatic neuroses J. Hoffmann (*Berliner klin. Wochenschrift*, 1890, No. 29) found eight cases of simulation. The histories indicated extremely clever simulation continued for years. One case escaped detection, although under observation at a University clinic for several weeks. He thus shows that the characteristic picture of traumatic neurosis may be accurately and successfully simulated in many of its details, and that the discovery of the fraud by the specialist is not so easy as has been assumed. According to the author, there is no generally applicable method for the detection of the simulation. The principal means are: An accurate knowledge of the clinical picture of the disease, quiet demeanor, incessant vigilance and presence of mind in order to be ready to catch the simulator at the decisive moment. He does not wish to question the existence of a genuine traumatic

neurosis. On the other hand, he agrees with Jolly, Eisnlohr and others that the individual symptoms which are known under the generic term of "traumatic neurosis" are so different from each other that it would be preferable to dispense with this collective name, and to return to the former designations indicative of the principal feature of the disease.

Thus we have an organic traumatic nervous disease, a cerebro-spinal concussion, a traumatic hysteria, a cerebral or cerebro-spinal neurasthenia, or a psychosis, etc.

In this way the physician is enabled to undertake with greater confidence the management of these cases, and to classify them accordingly.—*Centralbl. f. klin. Med.*, No. 11, 1890.
W. M. L.

CHRONIC ARTICULAR RHEUMATISM AND ITS RELATION TO THE NERVOUS SYSTEM.

Wichmann (*Centrbl. f. klin. Med.*, No. 12, 1891) has endeavored to collect and explain the nervous symptoms occurring in chronic articular rheumatism, as a result of his own observations in a large number of cases. His statements relate exclusively to chronic rheumatic polyarticular inflammation. He believes that an involvement of the cord is indicated by the large number of symmetrical affections which occur in chronic articular rheumatism; by the symmetrical areas of erythema in the beginning of the joint disease; by the symmetrical hygromata of the bursæ mucosæ and *nodosités rhumatismales souscutanées* (Troisier), of which latter the author has seen four cases; moreover, swelling of the bone and local proliferation of the same, such as Heberden's phalangeal nodes, appear upon both sides in the neighborhood of the joints. The bilateral flat-foot, and, above all, the well-known symmetrical occurrence of the joint affections themselves, seem to arise under the influence of the spinal cord. It remains an open question, however, whether the cord is primarily affected or only involved by reflex action. It is well known that Charcot explains the contracture of the flexors occurring so frequently in chronic rheumatism by assuming that the inflammatory irritation of the articular nerves passes into the spinal centres, which reflect the irritation to the muscles through the motor nerves. The predominance of the flexors over the extensors would gradually produce a contracture of the flexors. This hypothesis will not explain

the occurrence of extensor contractures. Furthermore, one must consider the action of disturbed trophic nerves or centres, in order to understand the twisting of the terminal phalanges toward the radial side as they are seen in chronic articular rheumatism of the fingers. Moreover, primary nerve irritation would remain to be proved, as in other irritative joint affections, such as gouty arthritis and arthritis deformans, such contractures do not take place. On the other hand, similar contractures as in chronic articular rheumatism are observed in cerebral diseases (infantile spastic hemiplegia, etc.). If, therefore, Charcot's hypothesis is untenable, it is the opinion of the author, in view of the symmetrical phenomena, that we may assume the spinal cord to be the seat of the lesion; for it is to be considered that arthropathies and arthritides (*arthrititis neurotica*) occur in affections of the spinal cord, such as tabes and punctured wounds of the cord. By this process of reasoning he inclines to the opinion that in chronic articular rheumatism the affection of the cord is the primary element, and that the disease of the joints and the concomitant symptoms are dependent thereon. In the light of the spinal etiology, he further discusses the trophic and vasomotor disturbances appearing in chronic articular rheumatism, such as the changes in the skin, glossy skin, scleroderma, pigmentation, etc., peliosis and purpura rheumatica and the perspiration. He also utilizes the sensory disturbances in support of his hypothesis.

W. M. L.

PARASITES OF THE BRAIN.

Dr. Szczypiorski, in a thesis recently presented to the faculty of Paris, gives us the following important points regarding these parasites:

Those which have been found up to the present time are the cysticerci and the echinococci, of which the former are much more frequent and more numerous.

In the fresh state they can always be recognized by the undulatory structure of the caudal vesicle. They may be produced from a tape-worm existing in the intestine of the person (auto-infection). They are located in the cortex of the brain. The echinococci are rarer than the former, and consist generally of a single cyst filled with fluid. They are located, as a rule, in the deeper parts of the brain. They enter the circulation from the digestive tract, and are carried to the brain by the blood-vessels.

The symptoms produced by the presence of the echinococcus are: constant headache, epilepsy, partial paralyses, increasing dementia, the steady progress of the malady; its commencement between the ages of twenty and thirty, and a duration of two or three years.

The symptoms of cysticercus are: an irregular course, its commencement at the age of forty or fifty, occasional epileptic attacks, intermittent headache, psychic troubles, emesis, contractures, its duration from a few months to twelve years and over.

They frequently pass unperceived.

The ordinary termination is death, which may occur suddenly.

It should be added that in the case of the cysticercus the prognosis is not so bad, since in twenty per cent. of the cases there were no very alarming symptoms, and death was due either to old age or to some intercurrent malady.

As a prophylactic measure, a tape-worm should be expelled from the body as soon as possible. The radical treatment consists in trephining and removing the tumor.

As a rule, the treatment can be only symptomatic.

W. F. R.

HYSTERICAL TREMOR.

Dr. Remond, in the "*Gazette des Hôpitaux*," gives us two cases of this curious affection. The first was a man, fifty-four years old. He had not been a drinker, nor had he ever contracted syphilis.

Two months before, while witnessing a review, he had been knocked down by the horse of a cavalryman and very much frightened. This was followed by violent headache, and his legs and arms trembled so that he could not hold anything in his hands, and he was hardly able to stand erect. When in repose, his hands do not move; but if he tries to carry a glass of water to his mouth, he is utterly unable to do it on account of the trembling.

The knee-jerks are slightly exaggerated. Ankle-clonus absent. Pupils small and equal; no nystagmus. Voice slow and jerky. Anæsthesia of the legs and arms; there was also anæsthesia of the pharynx, and just above the right eye there was a very painful point.

Here were two sets of symptoms, one pointing very strongly to multiple sclerosis and the other to hysteria. Which of the two was it?

Small doses of bromide were given, along with elaborate directions, and much stress laid upon the wonderful heal-

ing power of the remedy. In less than a month all the symptoms had vanished and the patient demanded his discharge.

It is hardly necessary to say that the affection was undoubtedly hysteria.

The second case was that of a roofer, thirty-eight years old. One year ago he experienced a severe fright in falling on a roof. A chimney stopped him and saved his life; but when he was picked up he was paralyzed on one side and aphasic. He was removed to the hospital, and cured in five months and a half.

Two weeks ago, after a severe mental shock, he fell down unconscious, and when he came to himself he was affected with trembling, which has grown worse ever since. In the right arm it is a tremor resembling paralysis agitans. When any movement is attempted the tremor in the right arm ceases, but the member moved is affected with tremor which closely resembles that of multiple sclerosis. His speech is slow and halting, but the tongue does not tremble. There is almost complete anæsthesia of the entire surface of the body. The knee-jerks are exaggerated; ankle-clonus present. When attempting to walk, he cannot hold himself erect without assistance, and the body is affected with continual shocks.

This case left the hospital before the crucial test of cure could be applied. These two cases belong in the same category, however. It is always hysteria, that protean neurosis, imitating first one disease, then another, occasionally superposing itself upon other affections, but never combining with them.

W. F. R.

MORVAN'S DISEASE A CLINICAL FORM OF SYRINGOMYELIA.

Before the Société Médicale des Hôpitaux, of which there is a report in "*Mercredi Médical*," March 4, 1891, Dr. M. A. Joffroy recently gave some details of an autopsy held upon a subject who had succumbed to Morvan's disease, showing results that substantiated his earlier idea that this affection is simply a very original yet perfectly characteristic variety of syringomyelia. In the case cited the disease began about the age of twenty, and lasted twenty-eight years. The right hand presented typical deformities that had affected the thumb, the index, middle and ring fingers. There was restriction of the visual field,

in all probability due to hysteria, which was also present, this symptom not belonging properly to syringomyelia.

Autopsy revealed cavities and segmentation in the cord and immense loss of substance. L. F. B.

NERVE-COMPRESSION DUE TO CALLUS.

In the "*Gazette Hebdomadaire de Médecine et de Chirurgie*," March 14, 1891, there is an exhaustive paper on this subject that contains much of interest by the late Dr. Trelat. Nerve abnormalities following fractures are numerous. Sometimes the cause of the fracture is also the origin of the nerve injury. Again, spicula of the broken bone may lacerate or run through a nerve, or the nerve substance may be imprisoned by the reduction of the fracture. All these possibilities are excluded in the present consideration of nerve-compression.

The author cites a case illustrating the good effects of surgical interference, in which there was compression of the radial nerve following the reduction of a fracture of the humerus in a child of eight. After perfect union was established, there remained a paralysis and atrophy of the extensors and an intensely painful spot just underneath and in front of the epicondyle. There was an extensive and deforming callus at the seat of fracture. Liberation of the nerve resulted in complete use and health of the arm, the child later as a youth winning prizes in athletic sports.

A similar paralysis in a man of forty was treated by the knife, with the result of retarding union of the bone and inducing an abscess at the point of incision. Muscular movements were recovered in time. Paralysis in such cases is not immediate, appearing only one, two or three months after the accident, and progressing slowly as different branches of special nerve-trunks are involved. There is rapid muscular atrophy and sometimes altered sensation. Surgery alone has power to relieve this condition, which in itself is sufficiently serious, the nerve-degeneration being rapid and the compression often setting up an ascending neuritis or myelitis.

Pressure on a nerve may come from underneath as well as from imprisonment, the mass of callus raising and stretching the nerve substance or partially inclosing it in a little channel of osteo-fibrous material or of pure bone. The order of compression depends largely upon the locality of the fracture. In case of pressure from underneath, when the nerve is raised up, instead of being smooth, round,

brilliant and glistening, the nerve is flattened, grayish, cloudy and often irregular in outline. When imprisoned by osteo-fibrous material, the nerve may retain its natural rotundity, but has a shrunken appearance within the callus, and presents just beyond it a matty ganglionic swelling analogous to nerve-proliferation in the stump of an amputated limb. The nerve in this instance has the general appearance of a little fibrous cord. The histological manifestation is similar to that resulting from division of a nerve, with this exception: all the fibres in the severed ends of a divided nerve undergo simultaneous degeneration. Not so in degeneration due to this osteo-fibrous compression. One fibre after another is attacked. There is a difference in time, but not in kind, in these processes.

Age is an important factor in the regeneration of nerve-tissue, the best results in surgery like the foregoing being obtained in young subjects. Crushing the callus is insufficient to afford relief. It is imperative to cut down on the nerve, expose it to view, find out the exact cause of compression, and remove it speedily. The difficulty of the operation—Esmarch's bandage should always be used—is chiefly due to changes in anatomical distribution caused by the callus itself. To avoid bewilderment and loss of time, a long incision should be made and the nerve first traced somewhere in its course where its position is normal, instead of beginning to follow it at or too near the callus. If the nerve is simply lodged under a fibrous cover, the bistoury will serve to liberate it. But if true bone imprisons it, a portion must be chiseled away. The callus must then be leveled and made smooth.

In certain instances it may be necessary to suture periosteal fibres to prevent future implication of the nerve, or to attach the nerve itself to some neighboring muscle. But such necessities have not yet arisen in the author's practice.

L. F. B.

ATYPICAL FORMS OF MULTIPLE SCLEROSIS.

The "*Progrès Médical*" for March 11, 1891, contains Dr. J. M. Charcot's lecture upon the foregoing subject. The symptoms of multiple sclerosis are of both cerebral and spinal origin. Among those of spinal origin are spasmodic paraplegia and intention tremor. Embarrassment of speech, a wandering gaze, nystagmus, vertigo, apoplectiform or epileptoid attacks, etc., are cerebral symptoms. The existence of all these disease manifestations constitutes the

classic type of disseminated sclerosis. Other forms exist, presenting conditions less definitely recognized. Chief among these conditions are eye troubles, such as amblyopia and blindness. The optic disk presents an appearance very different from that seen in tabes, there being simple discoloration of the inner border or a yellow dullness, as if the surface were veiled by an indistinct cloud. In tabes, even when syphilitic in origin, drugs are powerless to arrest the fatally progressive blindness. Not so in disseminated sclerosis, the amblyopia and amaurosis being for the most part transitory, owing to the relative integrity of the axis-cylinders that remain to the last in the sclerotic patches. Occasionally guarded prognosis must be given concerning vision, for in exceptional instances its loss has been permanent.

It is well to remember that multiple sclerosis does not belong to the list of fatally progressive and incurable diseases. Its course may be interrupted by remissions, arrests, retrocessions even. These possibilities explain the existence of the disease in atypical forms.

The sclerotic process may impinge upon the anterior horns of the spinal cord, and the cells of these anterior horns, owing to the presence there of axis-cylinders as elsewhere, may continue their function for a longer or shorter period. But the limit of resistance is reached at last, and, in consequence of this destruction, amyotrophia follows. Pain, vesical disturbance and various anæsthesiæ not belonging to the regular picture of multiple sclerosis may then present themselves and give to the case the general appearance of progressive locomotor ataxia.

These atypical forms first came into notice in 1877, when Dr. Pitres published reports of two autopsies of cases that during life had been diagnosticated as transverse myelitis. Spasmodic paralysis had existed; there were sclerotic patches sparsely scattered throughout the cerebro-spinal system in one instance, and in the cord and medulla oblongata in the second. This revelation led the lecturer to state emphatically that multiple sclerosis existed in a third case, in which spasmodic paralysis was then the only symptom of moment on account of an earlier history of vertigo, diplopia, transitory amaurosis and slight trembling of the hands. The autopsy, three months later, confirmed this diagnosis. Spasmodic paralysis, in itself a symptom of small moment, may thus obscure the diagnosis of multiple sclerosis, unless the following factors are taken into account :

I. *Anamnestics*.—Earlier occurrence of vertigo, apoplec-tiform attack, transient blindness, tremor.

II. *Concomitant signs*, as embarrassment of speech, nys-tagmus, etc.

III. *Evolution* of the disease, its remissions and special retrocessions.

There are three general classes of anomalous or *fruste* disseminated sclerosis. The first is *fruste* by incompleteness. Spasmodic paraplegia, together with various paralyses, give some objective symptoms of transverse myelitis. There are also primitive *fruste* forms that are such through arrest of development of the disease. Here also spasmodic paralysis is a prominent symptom. Others again, the third class, are *fruste* through the intervention of isolated phenomena.

There are thus three principal varieties of anomalous *sclerose en plaques*: the hemiplegic, the tabetic and the lateral amyotrophic.

L. F. B.

SENSORY APHASIA, WITH AUTOPSY.

The "Journal des Sociétés Scientifiques," March 25, 1891, publishes an account of this condition given to the Biological Society by Dr. M. J. Déjérine. The case recorded corresponds to what Wernicke understands and writes about as simple sensory aphasia. There was marked difficulty in spoken language, though Broca's convolution was found intact, which proves the necessity of establishing a distinction between real motor aphasia and paraphasia. There was complete word-deafness, pronounced paraphasia, alexia, agraphia absolute as regards spontaneous writing or writing from dictation. In copying, the patient would draw each letter separately, one after the other, in a very imperfect manner, the letters conveying no meaning to his mind. There was hemianopsia, evidently right-sided, without other visual defect. There was no optic aphasia nor psychic blindness. Hearing was good, also motility and sensibility, and the power of imitation well developed.

At the autopsy there was found a yellow patch on the outer surface of the left hemisphere that extended forward as far as the lower two-thirds of the ascending parietal convolution. These changes confirmed the diagnosis made during life of word-deafness and word-blindness, or sensory aphasia.

The perfect integrity of the auditory centre is essential to the proper function of vocal language. Losing sight of

this fact led earlier to the idea that motor aphasia could exist without lesion in Broca's convolution. L. F. B.

ASSOCIATED MOVEMENTS IN FACIAL PARALYSIS.

In "La France Médicale" for March 20, 1889, there is an account of Dr. Debove's case of facial paralysis, presenting in marked degree a peculiarity noticed by others. The patient could only speak with the eyes closed. Hitzig attributes this abnormal state to excitability of the bulbar nuclei; but Dr. Debove considers that it arises from efforts at movement. L. F. B.

CLINICAL.

EXTENSIVE POST-DIPHTHERITIC PARALYSIS.

Drs. Torras and Passual in the "Siglo Medico," August 10, 1890, report the following case of extensive post-diphtheritic paralysis:

A child, male, four and a half years old, which, from the statements of the mother, undoubtedly had passed through an attack of laryngeal diphtheria, presented itself at the hospital. There was paralysis of the velum palati; the voice was nasal; food and liquids were regurgitated through the nose. The lower limbs were paralyzed; their muscles were paralytic and flaccid, and the child was unable to stand. Syrup of protoiodide of iron was prescribed, and as nourishing food as possible ordered to be given, and the mother was told that the symptoms would disappear gradually in the course of a few weeks. But this prognosis, instead of being confirmed, was followed by the development of a grave bronchitis, pointing to an affection of the bronchial muscle-fibres. The patient coughed, and could only with difficulty raise the profuse sputa. An expectorant was prescribed, and as constipation had been existing for two days, which would seem to indicate an implication of the muscular tunic of the intestines, an infusion of senna was administered and a rectal injection of soap and water ordered. This caused the expulsion of several fecal masses and a diminution in the size of the distended abdomen. As the lung symptoms diminished in severity, tincture of nux vomica, in combination with ergotine, was given in increasing doses. After continuing

these remedies for several days, the motility of the affected muscles returned; the thoracic and abdominal symptoms also disappeared quite promptly; the child's appetite improved, and in ten or twelve days he was able to stand. The voice lost its nasal sound; deglutition became easy and quite normal. The remedies were continued for some time after the disappearance of all the symptoms. The writers would regard *nux vomica* and *ergotine* as powerful agents in such conditions. P. and P.

RHEUMATISM OF THE SPINAL MENINGES, WITH CONSEQUENT PARALYSIS.

Prof. Maragliano ("Gazetta degli Ospitali," No. 1, 1891) describes a case of rheumatism of the spinal meninges, limited to the anterior roots, with consequent paralysis. The patient, a young girl, nineteen years of age, had always been apparently well. At the age of seven her mother suckled a neighbor's child, and a short time after suffered from a cutaneous eruption, which was diagnosed as syphilitic. It could not be determined how she was treated, but the eruption disappeared without any further complication. The daughter, who also lived with her mother, suffered simultaneously from ulcerations on her lips, which were then thought to be syphilitic. These, however, disappeared without leaving any trace of constitutional syphilis behind them.

From 1881 to 1884 she worked in the rice-fields, and she states that six years ago she had experienced pains in her knees, which were followed by swelling. Both disappeared spontaneously after two months. Her brother, also working in the rice-fields, was affected in the same manner.

October 26, 1890, a slight swelling appeared on the internal portion of the first right metatarso-phalangeal articulation. After rest in bed, this so much improved that it troubled her but little.

October 30th, while going up stairs, she felt a sensation of weight, tiredness and as if strained in the right lower extremity, with uncertainty in movement. This uncertainty increased to a difficulty and finally to an impossibility of making any active movement with the extremity affected. Brought into the hospital, a paralysis of the right lower extremity was diagnosed. Passive movements could be made, with some resistance, however. The patellar reflex was absent on both sides. No hysterogenic zone could be

discovered. Pressure along the spinous process was painless. Slight anomalies in the reaction to the electric current were noticed.

During her stay in the clinic she had frequent headache. Paralytic symptoms appeared on the left side, which, together with the phenomena on the right, much improved, until the symptoms on the left had entirely vanished. Œdema of the right extremity set in; a decubitus spot and several erythematous places made their appearance. The muscles of the limb atrophied, and at one time there was paralysis of the bladder.

Although the patient had suffered in her childhood from an eruption supposed to be syphilitic, yet as no other signs of syphilis had followed, the glands were not involved, and no relics of syphilis being manifest, the paralysis was diagnosed as rheumatism, with localization in the spinal meninges, limited to the zone of the anterior roots. This diagnosis being made, means were employed to favor the reabsorption of exudates, the activity of the nerve-centres and the nutrition of the muscles (iodide of potassium, iodide of iron, strychnine and electricity). Eight days after, the patient was much improved and the paralysis nearly disappeared.

P. and P.

THERAPEUTICAL.

TREATMENT OF EPILEPSY.

In the "Bulletin Général de Thérapeutique" for March 15, 1891, Dr. Poulet, of Planches-les-Mines, describes his treatment of epilepsy with the bromides combined with some organic agent capable of producing anæmia of the brain:

"Having decided upon a course of treatment, we must first consider the dose. This will vary—dependent upon the age and sex of the individual, idiosyncrasy and intensity of the affection. In adults we may give daily five to six grammes of the bromides in the female, seven to eight in the male, coupled with one centigramme of the sulphate of eosérine, or one centigramme of picrotoxin, or one milligramme of the sulphate of atropia. Instead of prescribing eosérine, we may substitute for it two grammes of the tincture of Calabar bean, or seventy-five centigrammes of the powder. Instead of atropia, give two grammes of the tincture of belladonna.

"In cases of cardiac epilepsy, give one and a half to two grammes of the tincture, or twenty-five centigrammes of

the powder. The administration of these drugs lessens the dose of the bromides, and is followed by very happy results."

The author states: "If the treatment is well directed, no case of essential epilepsy can resist." He also warns against the employment of two of the synergic agents simultaneously.

W. C. K.

BORAX IN THE TREATMENT OF EPILEPSY.

Borax was proposed for the first time by C. Folsom in the treatment of epilepsy in 1881. Gowers reported four cases treated with this remedy, out of which in three a cure was obtained. Dr. Dijoud (*El Siglo Medico*, 1913, 1890) has tried it in twenty-five chronic epileptic patients in which the bromides had been used either without success or with no satisfactory results. The duration of the treatment was from four to seven months; the dose varied from one to six grammes daily. He entirely cured one, and notably relieved all the others, except six. From this it is apparent that borax is able to diminish—in a great number of cases which do not yield to the bromides—the frequency of the epileptic attacks. The dose may, without inconvenience, be carried up to six grammes per day, yet one should be careful to commence with one to two grammes daily, and progressively increase the dose. The following is a convenient form for a one to four-grammes dose:

R	Sodii biborat. pulverizat.,	-	-	1-4.00
	Syrup corticis aurant,	-	-	30.00
	Aquæ destillat.,	-	-	100.00

Sufficient for one day.

SIG.—To be taken in two doses; one in the morning, and the other in the evening.

When the dose exceeds four grammes per day, one gramme of glycerine should be added for every gramme of borax over four grammes.

In the prolonged use of the remedy Dr. Dijoud recommends the following formula:

R	Sodii biborat. pulverizat.,	-	-	10.00
	Glycerine pur.,	-	-	6.00
	Syrup corticis aurant,	-	-	94.00

SIG.—To be taken by the spoonful. P. and P.

HYDRO-ELECTRO-THERAPEUTICS IN SOME
NEUROSES OF CHILDHOOD.

Dr. U. Stampa in the "*Archivo Italiano di Pediatria*," November, 1890, proposes to substitute for faradic and galvanic currents hydro-electric baths in the treatment of some neuroses of childhood, especially as these are well borne by children. He prefers the bipolar bath, and lets both electrodes hang down into the bath-tub. He has obtained good results with this method of treatment in cases of infantile paralysis with already commencing atrophy, in nocturnal enuresis and in rachitis, which he thinks owes its origin to a trophoneurosis. He especially laid stress upon the improved nutrition of the children which underwent this treatment.

P. and P.

URETHRAN IN TETANUS.

Dr. G. Maretti (*Raccoglitore Medico*, Sept. 30, 1890) was called to a case in which he made the diagnosis of rheumatic tetanus. The temperature was slightly above the normal; the pulse 120. Darkness, complete rest, chloral and subcutaneous injections of carbolic acid were without effect. It was finally ascertained that about fifteen days before, the patient had injured the big toe of his right foot, the skin being torn off in a spot. The diagnosis was changed to traumatic tetanus; local treatment was instituted (curetting of the lesion on the big toe, and a solution of phenic acid (30), and corrosive sublimate (3) in water (1000) was applied topically). Chloral was given three times a day, the daily amount being six grammes. The chloral was given for twenty days. Complete resolution of the opisthotonus was thus obtained, yet there remained a slight degree of trismus, with some rigidity of the pectoral and abdominal muscles. The writer then substituted urethran for chloral, its use being suggested by Prof. Coza, who remarked its manifest antagonism to the convulsions produced by strychnine, and hence recommended it in the treatment of tetanus and convulsions. The remedy was first given in the dose of two grammes a day, and finally carried up to three grammes, with total disappearance of the tetanic symptoms.

The writer claims this to be the first case of tetanus in which urethran was used.

P. and P.

TREATMENT OF NEURASTHENIA AND FUNCTIONAL NEUROSES.

"Médécine Moderne," February 5, 1891, contains in part Dr. Benedikt's recent remarks upon this important topic. Neurasthenia is the exclusive prerogative of the learned professions and business or political careers demanding trained, alert intelligence. The student in "Faust" wishes to learn everything. We smile at the play, and insist that our children shall attempt to master all things. Hours of sleep are curtailed as years advance, and insomnia becomes a habit rendered only the more desolating by the use of hypnotics. Neurasthenia is a psychic disease of cortical origin, born of emotion and overstrain. The cure lies in ministrations to the mind diseased as well as in props for disordered function. The first step is to remove the cause of strain, and this before permanent or too extensive damage is done. It must be explained definitely to the patient that this is not done because he has lost aptitude for work, but simply that accustomed tasks excite him, and therefore exhaust his powers unduly. Work of a different nature can be undertaken with advantage, provided sufficient repose is possible afterward. Complete inactivity is a sure way to drive the typical neurasthenic to despair. The delicate question in treatment is the selection of such occupation as will exercise the faculties and strain no part of the organism. The neurasthenic must be dominated, must be taken possession of and held firmly. Charlatanism does this, and succeeds in bettering the condition. Travel is good, if interesting; games are invaluable, especially those requiring skill, like chess and billiards; cards have a therapeutic value not sufficiently appreciated.

Ingenuity is a quality indispensable in the wise treatment of nervous cases. However well educated, the physician will never succeed with such patients without this happy combination of strategy and tact. General faradization and galvanism should be employed, iron and arsenic that combat so successfully abnormalities of molecular equilibrium in the nervous system, and for a short time bromides combined with digitalis or valerianate of zinc to overcome insomnia. Other measures to combat sleeplessness are systematized mechanical movements, the electric douche, and an arrangement of meals that makes it impossible for the hours of digestion to interfere in any way with sleep. Alcohol

is often a valuable hypnotic. Anorexia, which is an accompaniment of neurasthenia, is often a frequent cause as well.

Intellectual pursuits produce muscular exhaustion just as physical efforts do, unless this loss is made up by food. The right kind of food, and not too much, is what the neurasthenic needs. To live according to the dictates of reason, physical exercise should always be associated with intellectual work. Vacations and a strict observance of repose on Sunday are excellent preventives of neurasthenia.

L. F. B.

CRANIO-ENCEPHALIC TOPOGRAPHY AND NEW OPERATIONS IN CRANIO - CEREBRAL SURGERY.

A lengthy paper on this subject by Dr. Rieffel appears in the "*Gazette des Hôpitaux*" for March 7, 1891. Among the latest procedures in cranio-cerebral surgery are noted the recent efforts of Dr. Lannelogue to relieve idiocy by means of craniectomy, an idea originating with the operator, and which others have followed out successfully. It seemed to this eminent professor that it would be possible, in case of restricted or retarded development of the brain, to give this organ a fresh impetus to activity by overcoming in a measure the pressure of the skull, preferably in the region of those centres that preside over animal life.

His first operation was on a child, four years old, scaphocephalic and idiotic. About a finger's width from the median line and parallel to the sagittal suture, a narrow incision was made of nine centimetres' length. The lips of the wound were closed without drainage, care being taken not to take up any periosteal tissue from about the bony opening. In four weeks improvement was marked. The child grew quieter, took notice of things about her, played, laughed, and commenced to talk.

Other operations were equally successful, sometimes whole strips of osteo-periosteal tissue being removed.

It is possible that measures at once radical and harmless, like the foregoing, may overcome, to a greater or less extent, a condition hitherto quite beyond the resources of medical art, and which up to the present time have been at once hopeless and appalling.

L. F. B.

DRAINAGE IN CHRONIC HYDROCEPHALUS.

Prof. R. Pott, "*Archiv für Kinderheilkunde*," has successfully punctured the skull and drawn off a quantity of fluid from the ventricles of a child four weeks old, who was suffering with hydrocephalus. An incision was afterwards made, so as to insure more perfect drainage, as the author was convinced that puncture alone was an unsatisfactory way of dealing with these cases. Where drainage was free the results were always better.

B. M.

GYMNASTICS IN DISEASES OF THE NERVOUS SYSTEM.

Dr. Karl Hasebrock, of Hamburg, "*Deutsche Medical-Zeitung*," has made some very careful investigations with the method of Zander, as to its physiological and therapeutical effects on various diseased conditions, especially those of the nervous system. He is satisfied that there is a local action on the muscular structure of the vessels, and that the mechanism is a reflex influence on the circulatory and nervous systems. That there is a reduction in the frequency of the pulse, an increase in the vaso-motor arterial tension, an increase in the tone of the heart muscle, and finally, a general toning up of the entire nervous system. He also advises in cases where there is a weak heart, that digitalis be given, to compensate for the extra exertion, until there is a substantial increase in tone of the whole musculatur.

B. M.

CHOLERA AS A NEUROSIS: THERAPEUTIC CONSEQUENCES.

("Medical Age," Nov. 25, 1890.) A paper by Alex. Hackin, M.D., F.R.C.S., contains the following: The neurotic character of cholera is most clear. The vomiting and diarrhœa are connected with the attack upon the nervous apparatus of the stomach and intestines. The crisis, cramps, vertigo and spasms have a nervous origin. It is to the vaso-motors that we must defer the depression of the functions of respiration and circulation. We shall find in the antagonism of the pneumogastrics the means of checking the action of the sympathetic nerves in cholera. In every case observed, the vomiting, stools, and cramps were arrested by stimulating the pneumogastric in the neck. It is sufficient to produce vesication over the branches of the nerve in the neck, when the effect is generally instantaneous and all the morbid phenomena disappear, even before the blisters are to be seen.

A. F.

A CONTRIBUTION TO THE STUDY OF
CHLORALAMIDE.

John Gordon, M.D., (in the *British Medical Journal* of May 16th, 1891). The following summary embodies the results of the observations detailed in this contribution to the study of chloralamide:

1. The reflex irritability of the spinal cord was diminished.
2. Peripheral sensation was not reduced.
3. On frogs there were hypnotic action, slowed respiratory and cardiac actions, abolition of reflexes, and subsequent recovery of the normal condition.
4. Blood pressure was slowly reduced with large doses.
5. Pulse rate was not affected.
6. Respirations were reduced and finally abolished.
7. The conductivity of motor nerves was destroyed, and was not restored by subsequent washing in salt solution.
8. The irritability of muscle substance was destroyed, and was not restored by subsequent washing in salt solution.
9. The excretion of urea was increased by small doses—0.3 to 0.6 gramme—but was diminished by large doses—2 to 3 grammes.
10. The excretion of phosphates was diminished with both large and small doses.
11. The excretion of the fluid constituents of the urine was not constantly affected by the smaller doses, but was diminished by the larger doses.
12. Reaction of urine was not influenced.
13. Color and odor of urine were not affected.
14. No albumen was detected.
15. Action on the skin was negative.
16. Temperature was not affected.
17. Digestion did not appear to be interfered with.
18. Hypnotic action in the healthy was induced with doses of 1.25 gramme and upward.
19. In painless insomnia the results were highly reliable.
20. In insomnia with moderate pain the results were fairly reliable.
21. In insomnia with acute pain it was not reliable.
22. The analgesic action was feeble.
23. The hypnotic effect followed usually within half an hour after exhibition.
24. The sleep induced was tranquil, pleasant, and natural, and the awakening free from confusion or depression.
25. No deferred action.
26. No craving for the drug was noticed.
27. The point of tolerance was not readily reached.
28. The doses found most reliable were from 2 to 3 grammes.
29. Giddiness and incoördination and headache sometimes followed administration.
30. In senile insomnia, pulmonary diseases and hysteria the results were highly satisfactory.

In conclusion, I have pleasure in thanking Professor J. Theodore Cash, F.R.S., for suggestions and kind assistance and the unstinted use of his apparatus and laboratory.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting of April 7th, 1891.

DR. B. SACHS in the Chair.

THE PATHOLOGY OF LANDRY'S PARALYSIS.¹

The case reported was that of an unmarried man, aged 45 years, free from any syphilitic or rheumatic taint, who was suddenly attacked by a paresis of the legs which, in the space of four days, became a complete paralysis, and then the muscles of the trunk, arms, and parts supplied by the bulbar nerves became paretic in the order named, and this paresis became a more and more decided paralysis until death from bulbar paralysis put an end to the further extension of the process. The paralysis was a purely motor one, the sensory nerves not being involved, nor were the sphincters of the bladder and rectum involved, although the paralysis of the abdominal muscles made the expulsion of the contents of these viscera difficult or impossible. As the result of a careful microscopical examination of the organs by Dr. Van Gieson, the only lesions found were a slight cerebral and spinal meningitis of quite recent origin and a degeneration of a few of the fibres of the interior roots of the cauda equina.

After a careful consideration of those diseases of the nervous system most nearly resembling Landry's paralysis, the conclusion was reached that no evidence has been brought forward which justifies us in abandoning the term acute ascending or Landry's paralysis; for it has neither been shown that the numerous cases of the disease in which no lesion has been discovered depend on faulty methods of examination, nor has any case been reported which was clinically a typical case of Landry's paralysis in which after death characteristic lesions were found either in the central nervous organs or in the peripheral nerves. Acute ascending paralysis (defined so as to exclude all cases in which sensory symptoms are prominent, or in which

¹ Abstract of a paper on Acute Ascending (Landry's) Paralysis read by Dr. H. Hun before the New York Neurological Society, on April 7th 1891.

well-marked bulbar symptoms are not present) must, therefore, be regarded as a clinical entity for which no corresponding lesion has as yet been discovered. That there is some change in the nervous system causing the severe symptoms cannot be doubted, but this change is probably of a chemical rather than of an anatomical character. From the many points of resemblance which acute ascending paralysis bears both to myelitis of the anterior horns and to multiple neuritis, this chemical change must effect either the motor cells of the spinal cord and medulla or the fibres springing from them; and, although this chemical change is so great as to cause an entire arrest of the function of these cells or fibres, yet it leaves no trace in any altered character of cell or fibre, no more than does morphia or strychnin leave any trace in the structure of the nervous system of their fatal action.

In regard to the nature of this supposed chemical poison we know nothing. The general tendency of the present day is to consider it to be a ptomaine, and indeed the acute course, the fact that it often follows an infectious disease, and that it is associated with an enlargement of the spleen, make it not improbable that Landry's paralysis is a germ disease. In further support of this view is the fact that Centanni and Eisenlohr have each found bacteria in the central nervous organs. In neither case was the bacteria cultivated. The case of Centanni was so imperfectly observed during life that the diagnosis even is doubtful, and in a second case, observed by Eisenlohr, no bacteria were found. In a number of cases bacteria was looked for as was done in the case reported, but was not found, so that the hypothesis that Landry's paralysis is due to bacterial agency, attractive as it seems, is far from being proven, and the pathology of the disease still remains to be discovered.

Dr. IRA VAN GIESON thought that Landry's paralysis was much more closely associated with cases of acute multiple neuritis, and acute poliomyelitis than was generally supposed. Landry, in 1859, had first accurately described several cases of ascending paralysis, although several observers had previously referred to the existence of such a disease. The speaker referred to several cases of acute multiple neuritis which had been reported in which the motor symptoms had predominated, and in which the whole course of the disease had been in close accord with that of Landry's disease. He also reported several known cases of acute poliomyelitis which resembled, very closely the disease in

question. The clinical resemblance of these diseases was characteristic.

It was well known that multiple neuritis and poliomyelitis was usually caused by poisons of different kinds, such as the ptomaines resulting from the infectious diseases and from phthisis.

Etiologically, Landry's disease seemed to come under the same category as these two diseases. Before a definite conclusion could be arrived at, as to the true pathology of Landry's paralysis, a more thorough examination of all nerve trunks, with the branches and terminal filaments, would have to be made. Hitherto such observations have been unsatisfactory, because all the nerves could not be examined, for obvious reasons. For this consideration, the speaker thought that it should not be taken as conclusive, when it was stated that the peripheral nerves were not diseased in Landry's paralysis, as thorough examination might have proven the condition the very opposite. As to the hyaline thromboses found in the central nervous organs, such changes occurred in ptomaine poisoning, but were not confined to cases of Landry's disease, as it might be present in any case of poisoning.

Dr. LEONARD WEBER some six years ago had described a typical case of Landry's disease, in which the patient had entirely recovered in three months. In his case trauma, the shock of suddenly stopping a runaway horse, or the violent strain of pulling upon the lines, had caused the disease, as the attack had come on subsequent to this accident. He did not think that the trauma militated against the poison theory. He was satisfied that if a more thorough examination of the nerves were made in these cases, our idea of the pathology would become more definite.

Dr. M. A. STARR thought that it was a question whether the disease was of sufficient duration to cause neuritis and degeneration of the peripheral nerves, and whether such cases ever continued long enough for changes of this character to take place. It was certain that a myelitic process might cause a suspension of function without causing definitive microscopical changes. He had never seen a typical case of Landry's paralysis, but had seen two cases which presented many of its symptoms. One was manifestly a case of diphtheritic paralysis, the other a case of beri-beri. He did not see how Dr. Hun could be satisfied that his case presented distinctive clinical symptoms. As for the case reported being like or bearing a resemblance to multiple neuritis, it certainly differed from any case the speaker had ever seen.

CONTRIBUTIONS TO THE PATHOLOGY OF
INFANTILE CEREBRAL PALSIES.

Dr. B. SACHS read a paper of this subject,

He stated that the mere form of the palsy, while pointing to a different location and varying extent of the lesion, should not constitute a sufficient reason for the creation of special types, and that a hemiplegia, a diplegia, or paraplegia might be due to the same morbid processes. Also that although the majority of the cases were of the distinctly spastic type, flaccid paralyzes did sometimes occur, which were unquestionably of cerebral origin; and again, that there were a few atrophic palsies due to lesion in the brains and not to lesions in the spinal cord or the peripheral nerves. These features, taken in conjunction with the occurrence of dementia or epilepsy, and with the typical contractures and exaggerated reflexes, made the diagnosis a very positive one. Out of the two hundred cases seen, doubt as to the spinal or cerebral origin was entertained in but a single instance. Hemorrhage, thrombosis and embolism were positively proven to be the most frequent lesions in the acute cerebral cases. Other conditions so often cited were terminal and not initial morbid states. Reasoning by analogy, Strumpell had concluded that a certain number of cases of acute infantile cerebral palsies were similar in every respect to cases of poliomyelitis anterior, except that the symptoms pointed distinctly to a cerebral and not a spinal trouble. It was natural, therefore, for him to claim that the gray matter of the cortex was subject to the same changes that affected the gray matter of the spinal cord; hence, if we knew of a condition of poliomyelitis anterior, why should there not be a condition of polioencephalitis? There was no inherent reason why not, except that proof was wanting. Strumpell himself had abandoned the idea of a polioencephalitis, and now spoke of primary encephalitis; but even this theory must be accepted with some reserve. All the evidence which had been collected by the speaker was entirely against the assumption that a primary encephalitis was the rule in the acute brain palsies of children. Of the three autopsies which he had made, each presented a condition entirely different from the other two. The first case reported was only interesting as a contribution to the pathology of this special subject, but was able to stand on its own merits as a case of tumor developing in the brain shortly before death. The history was as follows:

J. W., a healthy looking boy eight years of age, was well until six and a half years old; then, without any known cause, was seized with convulsions and developed right hemiplegia. When brought to the speaker, he had presented the symptoms of a typical spastic hemiplegia of the right side, including the face, and in this permanent involvement of the face presented at least one unusual feature. There was, furthermore, the history of loss of speech following the attack, and of repeated epileptic seizures involving the right hand only. His mental development was only a little retarded, his head showed the hydrocephalic condition, and during observation was noticed to increase in size. He had continued in good general condition for some time after coming under observation, when one day he suddenly fell down and the right hemiparesis of old standing was found to have developed into complete paralysis. As far as could be learned there was no loss of consciousness during this occurrence. The face was not more paralyzed than before; there was no incontinence of urine or feces. Within a few days after this fall the boy developed fever varying between 101° and 103.5° F. During this time a disturbance of vision was developed, which ended in absolute blindness. Speech became more and more difficult; a mild stupor came on, which gradually deepened into coma. Two weeks later intermittent opisthotonos was observed, which also became permanent. After five weeks, with the continuance of all the other symptoms, left ptosis and paralysis of left rectus externus and anæsthesia of the right cornea were added; the pupillary reflexes were lost and the contractures of the right side increased. The ophthalmoscopic examination showed a retrogressive papillitis. Death finally took place eight weeks after the fall. The old hemiplegia was ascribed to a cystic formation, probably due to hemorrhage over the left motor area. A tumor growing in the wall of the old cyst was the diagnosis made and adhered to by the speaker.

In no other way could the increase of the former hemiplegia without the addition of further symptoms be explained. The tumor was supposed to be a glioma or gliosarcoma, but the development of basilar symptoms later on had led to the belief that a basilar meningitis had developed, and it was therefore erroneously assumed that the original tumor was of tubercular nature. The autopsy was performed within twenty-four hours after death. The unusual size of the brain was at once made evident, from an accumulation of fluid within the ventricles to such an

amount that all trace of normal fissuration was entirely lost. While the brain was still in situ, a cyst occupying the left motor area and the tumor in its walls could be distinctly observed. After the brain had been removed, further changes were seen at the base; first of all a large cystic formation at the apex of the left temporo-sphenoidal lobe, pressing in upon and almost covering the left crus. The optic nerves were evidently atrophied, and the left abducens was extremely thin. Next in order came a large and hard tumor in the right temporo-sphenoidal lobe. In spite of the manifold lesions found in the brain of this child, there was no difficulty in explaining the relations between these lesions and the symptoms during life, nor in determining the sequence in which these various pathological conditions became established. That the old hemiplegia was due to the cyst in the left hemisphere there could be no doubt. In view of the peculiar detritus which was found, and of the very sharply defined limits of the cyst, the speaker had no hesitancy in assuming the hemorrhagic origin of this formation. The case enforced the point made in previous publications of the author's, that the autopsies which were made soon after the beginning of the disease were those which would prove most reliable.

In this case but three years had elapsed, and already the exact nature of the original process had become somewhat indistinct. The histories and results of autopsies of two other cases were also reported. The knowledge of the pathological lesions underlying these various conditions was not only a matter of scientific curiosity but it had a most distinct bearing point upon the treatment of these diseases. It was important for us to consider whether we had a right to interfere with the cerebral lesion in order that we might combat the development of idiocy or epilepsy or whether it be possible—one or the other of these conditions having been established—to obtain relief by surgical procedures. The question could not be decided unless some such analysis of the morbid lesions was attempted, as had been given in a table presented to the society. If we had to deal with a condition of parencephalus or with a condition of cortical agenesis, it was manifestly impossible to improve this state of things by an operation; and if such brain were encased within a microcephalic skull, even the recent operation of craniotomy would do no good. As for the birth palsies, no surgeon would be bold enough to attempt the removal of a subpial or subdural clot in a child only a few days old; and long before the child was strong

enough to tolerate any such serious operation the mischief was done; an encephalitic or a sclerotic condition had been established for which the surgeon's knife could promise no relief. It was only in the cases of acquired cerebral palsies that one would naturally think of the possibility of operative procedure. Even in these great discrimination had to be exercised in the selection of cases.

DR. STARR had about made up his mind that the pathology of cerebral palsies was very uncertain; too uncertain to permit of surgical interference. He did not agree with Dr. Sachs in regard to operation in cases of cortical cyst. Of the nine cases on record, all the patients had died. He thought that idea of primary encephalitis as a cause in these cases should be pushed into the background.

Dr. L. C. Gray was then re-elected president and Dr. J. A. Booth elected secretary of the Society for the ensuing year.

Book Reviews.

A TREATISE ON THE DISEASES OF THE NERVOUS SYSTEM. By Wm. A. Hammond, M.D. With the Collaboration of Græme M. Hammond, M.D. Ninth edition. New York: D. Appleton & Co., Publishers.

No work ever written upon the nervous system has achieved such a success as that of Dr. Wm. A. Hammond. It not only has had a universal sale and the approval for twenty years of most all the medical schools of this country as a text-book, but also, translated into many languages, it received the confidence of the neurologists in every country.

From time to time slight changes were necessary to bring it to date, and the eighth edition when it appeared disappointed many, as it hardly expressed the prevailing opinion of the times. This ninth edition, however, has, by the careful collaboration of Dr. Græme M. Hammond, been thoroughly revised and brought up to a great degree to the views of the present time. To comment upon the discrepancies of Dr. Wm. A. Hammond's work of twenty years ago is not a just purport of a present review; but to glance over the work now, one familiar with the older editions will observe many changes.

The style and general arrangement of the work are not altered, but one sees at a glance that the anatomy and morbid pathology have been changed throughout. The Nothnagel diagnostic points of brain, cerebellum and basal ganglion have been remodeled, and the cortical localizations especially have been thoroughly corrected and brought up to date. New chapters appear on syringomyelia, pathology and classification of aphasia, Thomsen's disease, acromegaly and electrical reactions.

We note the fact that pseudo-hypertrophic paralysis has been placed among the diseases of the cord, but considered essentially as a myosis.

The chapter on athetosis has had valuable addition of the report of the autopsy of the original case.

A new chapter on exophthalmic goitre—multiple cerebral sclerosis has been eliminated, and paralysis agitans substituted, and what was described as paralysis agitans is now entitled paretic tremor.

New chapters on multiple neuritis and sciatica, with changes in illustrations and the addition of many new and truly valuable ones, complete a necessary metamorphosis, and will continue to draw from the scientific neurologist the world over a eulogy to the greatness and the originality of the work by Dr. Hammond.

THE STANDARD DICTIONARY OF THE ENGLISH LANGUAGE. Funk & Wagnalls.

We in 1890 drew attention to the fact of the preparation of this work, and published Messrs. Funk & Wagnalls' invitation to aid in the preparation by sending words, derivations, definitions, etc. We again, at their earnest solicitation, draw especial attention to the following points, which mark many essential differences from other similar works:

"1. The 'locating' of the verifying quotations; that is, the giving in each instance not only the name of the author, but also the name of the book and the number of the page where the quotation can be found; to thus 'locate' 50,000 quotations is of itself a herculean task. Please compare our pages in this respect with those of any other single-volume dictionary. 2. The use, in the pronunciation of words, of The Scientific Alphabet, adopted by The American Philological Association. 3. The placing of the etymology *after* the definition. 4. The placing of the most important current definition *first*, and the obsolescent and obsolete meanings last—that is, the substitution of the order of *usage* for the *Historic Order* usually followed in dictionaries. 5. In the case of disputed pronunciation, the giving of the pronunciations preferred by other dictionaries, as well as the pronunciation which we prefer. 6. The giving of 50,000 vocabulary words more than are to be found in any other single-volume dictionary in England or America. (You will please note in this connection the care that is being taken in the admission of new words: no new word is admitted to a vocabulary place unless it has been passed upon by the able men in charge of this department, namely, Julius H. Seelye, of Amherst College, Edward S. Sheldon, of Harvard University, Edward Everett Hale, Charles A. Dana, and Howard Crosby.) 7. The indication, by the use of upper and lower case initial letters, as to whether words in the vocabulary are to be written as proper names or common names, etc., etc."

PRINCIPLES OF SURGERY. By N. Senn, M.D., Ph.D. Philadelphia: F. A. Davis.

A book worth possessing, worth recommending, and worthy a good long notice; but it is not really within the province of neurology, except the slight attention which is given to cerebral localization and cerebral abscess, pages 271 to 275, and in the few pages on regeneration of nerve-tissue, pages 57 to 66.

We cannot, however, refrain from applauding the effort to give us the most reliable opinions of surgical knowledge of the day, and unhesitatingly declare that this work ought to be in the possession of every surgeon and read by every one who pretends to operate.

THE POST-GRADUATE CLINICAL CHARTS. By Jo. H. Linsley, M.D., and Wm. C. Bailey, M.D.

These admirable record-books are arranged in such a way as to keep the record of each case eight weeks; they are complete, and are very valuable in serious cases and to aid in simplifying complicated case records.

They are cheap: 20 cents each, \$2.00 per dozen, or \$15.00 per 100. They are to be had of the Editors, 226 E. 20th Street.

BOOKS RECEIVED.

UEBER MULTIPLE NEURITIS. By Dr. J. Pal. Wien, 1891: Alfred Holder, Publisher.

THE DISEASES OF PERSONALITY. By Th. Ribot. Authorized Translation. Chicago: Open Court Publishing Co.

PEPSIN: A REVIEW OF THE PEPSIN QUESTION. By Carl Friedrich Witte. New York: Lehn & Fink.

RECENT PRACTICAL IMPROVEMENTS IN GENERATING OZONE: With Consideration of its Place in Nature and Medicine. Published by Ozone Manufacturing Co.

ELEVENTH INAUGURAL ADDRESS OF CLARK BELL, President of the Medico-Legal Society of New York.

MIGRAINE AND FUNCTIONAL HEADACHES FROM EYE-STRAIN. By Dr. Peter A. Callan, M.D.

INTERNATIONAL CLINICS: Quarterly Collections of Clinical Lectures, No. 1. Edited by John Keating and J. P. Crozer Griffith, M.D. Philadelphia: J. B. Lippincott Co., Publishers.

WOMAN AND HEALTH. By M. Augusta Fairchild. Quincy, Ill.: Published by the author.

HOW SHOULD GIRLS BE EDUCATED? By William Warren Potter, M.D. Buffalo, N. Y.

ORIGIN, PURPOSE AND DESTINY OF MAN: or Philosophy of the Three Ethers. By William Thornton. Published by the author.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

THE NEUROSES FROM A DEMOGRAPHIC POINT
OF VIEW.*

By IRVING C. ROSSE, A.M., M.D., F.R.G.S.,

Professor of Nervous Diseases, Georgetown University, Washington, D. C.

THE title of this paper may seem rather ambitious, since the study of vital and social statistics and their application to the comparative study of races and nations is almost too new to furnish many principles that may serve as bases of induction. However, I shall venture in a fragmentary way a few remarks bearing upon the subject, though strictly speaking they refer rather to the ethnological distribution of nervous disease than to demographic phenomena.

More than usual experience as a traveller has brought me in contact with various races of men under different mesological conditions. Personal observation in this line shows that in spite of physical and moral varieties, social temperament and morbid aptitude, there exists practically for the physician but one people, since there is no wide difference, biologically or medically speaking, in the human

* Read May 5th, 1891, in the Section of Medical Jurisprudence and Neurology, at a meeting of the American Medical Association in Washington, D. C.

species ; and the infirmities of men, notwithstanding their physical inequality and the extensive range of the nosological table, are much the same the world over, no matter whether they be classed among the white, the yellow, or the black races.

I confine myself advisedly to the simple classification of white, yellow, and black, as it seems to be the best for descriptive anthropological purposes, and is moreover that adopted by Aristotle, by Cuvier, and by recent contemporary authority, Dr. Latham. With reference to the scheme of knowledge that concerns the kingdom of man, I am neither pronounced monogenist nor polygenist, yet it may be remarked that in the consideration of ethnological subjects there seems to be an inability on the part of some people to rid the mind of such abstractions as geographical lines and political distinctions, though it is well known that such restraining conceptions will not keep away disease or noxious products. Indeed the prejudice is carried so far that one might infer the notion that being born in a stable makes one a horse. We should not lose sight of the fact that the offspring of an English man and woman in Africa will partake of the ethnological characteristics of the Anglo-Saxon race for all time to come, so far as we know, and that the descendants of a black African man and woman in America will perpetuate the negro type with marked persistency. The latter fact is so well established that in studying cases of crossing of the colored races, families have been observed in which at the end of several generations there were a series of children having much more than their father or mother the signs of an African admixture, going back at least to a fifth anterior generation.¹ A woman whose father was a quadroon, and whose mother showed traces of African blood, having married an Englishman of pure race, had nineteen children, all of whom showed unequivocal traces of this sixteenth of African blood. (*Bulletin de la Soc. d'Anthropologie*, 1865, p. 288). Among the motley population of the West Indies it is noticeable that the African

¹See writer's article *Atavism*. Reference Hand-book of the Medical Sciences.

negro, transplanted to a sky but little different from his own, has scarcely undergone any physical or moral modification ; in fact, he flourishes in the Antilles like the green bay tree; nature there being so much in his favor that after successive generations of mulattoes the children revert to the negro type. Of course I do not pretend to deny the special influence of altitude and of meteorological conditions. Food and drink and social and political surroundings ; the conception of the remotest past and a forecast of the remotest future circumstances ; everything in space from a man's shirt to the farthest nebulae and deepest stratum of earth that he can infer, are but parts of the tremendous whole that acts upon man or that he can act upon.

In the climate of the West Indies, for instance, which Darwin speaks of as that of a great, wild, untidy, luxuriant hot-house, the combined effect of humidity with extreme heat softens, relaxes and impairs the fibres in men and animals ; renders them lazy, inert, phlegmatic, and reduces them promptly to a state of complete atony. In these islands of indolence, even mosquitoes are lazy, and appear supremely indifferent when compared with the ones that I have seen inside the Arctic circle in Northern Alaska. Fish are not *game*. It is related with some show of authenticity, as evidence of climatic result, that the tarpon has allowed itself to be caught by fishermen who dived to the bottom and placed a hook in its mouth. Mice are also wanting in the alacrity that characterizes the northern species ; imported quadrupeds weaken and degenerate rapidly. The hog alone flourishes. Frenchmen do not acclimate and flourish in the Caribbean climate as they do, for instance, in Canada, under the same isotherm as Denmark ; and Dr. Rochoux declares that families who are not from time recruited become extinguished in the third or fourth generation.²

It is true that atmospheric vicissitudes have much to do with the sicknesses of all latitudes, and may impart a shade of color to a malady occurring in a subject whose anatomical elements have acquired from climatic influences

² See *West Indies*, Reference Hand-book of the Medical Sciences.

special biological conditions. Meteorological influences of a climate modify the telluric conditions, alimentation, habit, etc.; yet as regards climate, observation and experience seem to be our only guides. Up to the present time climatology has given us many figures with but few results, and topography teaches nothing upon the salubrity of a country. It does not explain why cholera is in India, plague in Egypt, and yellow fever on the shores of the Gulf of Mexico. Nor does it tell why malarial fevers spare New Caledonia, in spite of the existence of numerous marshes, nor why they ravage Madagascar in spite of its grand chain of mountains.

We, of course, do not look for sunstroke and malarial fevers among Eskimo, nor for frost bites and snow blindness among the natives of tropical Africa; nevertheless I have found locomotor ataxia equally in Hayti and New York, and have seen the prevailing geophagism of the Antilles and South America among negroes of the Southern States.

This neurosis of the function of digestion is not the exclusive infirmity of degraded and primitive black tribes. Pathological geophagy is found among the yellow race in Java, China, Siberia, and in the indigenous Egyptian. It has been observed in the white race in some of the provinces of Spain and Portugal, and among the poorer classes of whites inhabiting the pine barrens and thinly settled portion of several Southern States.

Gastric depravity is moreover not confined to human beings. Collective investigation on this subject enables me to mention numerous instances.³

I have known a sow to eat her whole litter of pigs, and I have seen coprophagy in one of the elephants confined in the London Zoological Gardens. On observing the habits of the fur seal during four visits to the Pribylof Islands, I have learned that these animals are in the habit of swallowing stones. The lithovorous habits were confirmed by finding in many stomachs stones weighing half a pound apiece. One paunch contained in the aggregate over five pounds of large pebbles, and in the stomach of one sea lion there were

³ See *Appetite*, Reference Hand-book of the Medical Sciences.

found more than ten pounds of stones, some of them of great size.

If such facts as the foregoing convince the biologist of the identity of pathological phenomena occurring in the animal series with those observed in man, it is more striking, from an anthropo-pathological point of view, that there is strong relation among diseases of men of all races in all climates. Nervous diseases form no exception to this principle; for in a general way it is true that all species of the human family suffer nearly in the same manner when exposed to the action of the same morbid causes.

Unhappily our knowledge of fossil pathology is small, unless we take into account the large collection of useless books in the Army Medical Museum, and we know but little of the indigenous races; yet the instances of prehistoric trephining that have come to light, lead us to infer that a close analogy exists between distribution in space and distribution in time, when considering disease from an ethnic point of view.

Bearing upon this subject, I may mention an Inca skull from Peru, which I have measured and described as "The Chaclacayo trephined skull" in "*Boston Medical and Surgical Journal*," May 6th, 1886, p. 412; also in "*Proceedings of the U. S. National Museum*, 1886," p. 417. A closer relation in time is shown in the great frequency of diseases of the cerebro-spinal axis among the autochthonous inhabitants of Brazil, the Guarranas, which at Rio de Janeiro amounts to more than one-tenth of the total mortality. In this same connection a French observer, Dr. Coindet, has noted the frequency of insanity among the aboriginal Mexicans.

In a retrospective way it is quite possible for a neurologist to study at the present time some of the convulsive manifestations of the middle ages; and if we have the snake worship, magical associations, and nocturnal mysteries of voodooism in Africa and Hayti, is not our own country pre-eminently the land of spiritualists, mesmerism, soothsaying, and mystical congregations?

Much of my practice having been among Jews, I have had occasion to notice the calm, sober, and sedentary man-

ners of that cosmopolitan race in whom the prolonged influence of climate has certainly caused no material transformation of type. The world over, they preserve the Semitic stamp, and observe the excellent hygienic code that secures them such pathological immunity that it is said they are less often struck by lightning than other people. On the other hand, the phenomena of nervous and mental disease are more frequent in them than in other races.

We find familiar examples of strange nervous manifestation in such circumstances as a dance among the Sioux Indians or a revival among Anglo-Saxons at a camp meeting. At both many of the participants will sing, laugh, weep, foam at the mouth, and fall exhausted in a faint or swoon.

Analogous conditions of nerve disturbance may be found equally among the black inhabitants of equatorial latitudes and the Hyperborean Mongoliæ who live under the midnight sun. Besides gross anatomical differences in the negro, and a difference of personal essence, so to speak, we find an obtusion of peripheral sensibility, said to be owing to flattening of the tactile corpuscle and to relatively larger peripheral nerves when compared with the volume of the brain. I have noticed in blacks the more frequent normal absence of the knee phenomenon as well as a want of fineness in the reflexes, and lessened sensibility to alcohol, and small intensity of nerve action. According to some observers, there is a difference in the electrical state. The lesser intensity of reflex action in the black race has been noted in its traumatic and surgical relations, also in the nervous phenomena of pneumonia as manifested in that race; and persons who have lived among primitive Africans, the Caffirs for instance, have noticed that they seldom or never sneeze or yawn. Missionaries relate that in sub-equatorial Africa it is impossible to make a native experience the feeling of disgust. Moreover, the black does not show that fear of death that exists in the white race. I have noted similar things among the Eskimos of Bering Strait, the Tchutchkis of Arctic Siberia, and among the Inuit population generally, whose mental grasp and capacity

are, by the way, rather owing to low schematism of the brain than to the index of the foramen magnum or the internal capacity of the cranium. The nervous derangements of the Northern tribes, who, I may say, believe in and practice Shamanism, go to show that nervous diseases are not, as many people believe, confined to civilization. Among these people I have seen insomnia, torticollis, epilepsy, chorea, cerebral hæmorrhage, paraplegia, hemiplegia, and suicidal mania.⁴

A nervous affection known in the State of Maine as the jumping disease has its analogue in the Siberian *Emeryaki* so prevalent in the vicinity of Yakutsk. I may remark incidentally that in the original account of this affection given to the public, the word was incorrectly spelled. Dr. Bunge, of St. Petersburg, writes me that it should be spelt *Emeryaki* in order to approximate its Russian pronunciation. There is besides *Emeryak*, the male patient; *Emeryaki*, *Emyraka*, the female patient; and finally a verb, *Emeryat-schitz*, to be affected with this disease. My friend, Lieut. Schuetze, of the U. S. Navy, who saw much of this disease during a prolonged stay on the "Lena Delta" in connection with the "Jeannette Search Expedition," has been good enough to send me the following very intelligent account of his novel and interesting experience:

"With reference to the peculiar disease, which has probably been professionally described to you by Dr. Bunge, I can at present write from memory—especially as I, a lay observer, must acknowledge that whenever I met with it, its manifestations were generally encouraged solely for the purpose of affording amusement. To the best of my recollection I never observed it south of Yakutsk on the Lena river. At present only three cases in Yakutsk and two in Verchoyansk come to mind as occurring in persons whom I knew. Generally speaking, it is common, and one is apt to meet it in the towns mentioned at almost any time, in the streets and market places. As the persons thus afflicted

⁴ See writer's "Cruise of the Corwin in the Arctic Ocean." Washington: 1883. Also, "The First Landing on Wrangel Island; with some remarks on the Northern Inhabitants." Am. Geog. Soc. New York: 1883.

are, I take it, usually on their guard, one might readily be acquainted with one of them for a long time without becoming aware of the existence of the disease. I have never heard anything of its cause. From my observations of it, I came to think—without being able to tell you the reasons for my impression,—that the extreme cold, the lonely life—*hardly* ever interrupted in the extreme north by the arrival of a stranger,—excessive vodka and tea drinking—any one or a combination of these evils had something to do with the exciting cause of the disease.

In the extreme north, of course vodka, and tea drinking are not common, because the materials necessary are rarely obtained; but in Yakutsk and Verchoyansk there is no dearth of them.

The first case which I noticed particularly was that of an exile; he was Russian by birth, had been educated in a military school, had been a captain of cavalry, had served years before with the general who was at the time of my visit Governor of Yakutsk. I knew him well, and although he had been in exile in Yakutsk for twenty years, he held at the time of which I write a government office—assistant to chief of police. He was married and had a grown son and two daughters. At an evening card party he was standing back of the chair of one of the players, the judge of the district—watching the game. I was sitting with another official of the district at a *sakuska* or lunch table. At the suggestion of my companion I made a small pellet of soft black bread and threw it at our victim, lightly striking him on his bald pate, his back being turned to me. He at once threw up his hands, gave vent to a yell or shriek, a sort of loud chatter, boxed the ears of the unsuspecting judge and disturbed the game generally; at the same time he trembled violently. Of course the “venerable” judge indignantly inquired for the cause of the attack, and the victim replied by angrily demanding why he (the judge) had touched him on the back of the head, as he knew what effect it would have, etc., After that incident, I frequently, I regret to say, amused myself in various ways on, as we will call him, Captain B. He invariably begged to be let

alone. When others tried it he would become very angry. At such times, that is, when he expected the irritation, he would try to get near a wall so that no one would be able to get back of him. I noticed that when so excited he would perspire freely. One could produce a mild manifestation by simply pointing a finger at him somewhat in the way "ticklish" persons are irritated.

Another case in Yakutsk was that of one of the *saved-nicks* or advisers to the Governor, of whom there were five composing His Excellency's Cabinet, if one might style it by so high-sounding a name. These gentlemen were all educated Russians. This case, was however, so serious and his position so elevated that I noticed it in him once only, and then by mere accident. In fact, I saw only the result, and he became so excited that no one dared ever to refer to it. Both of these men were hard drinkers, the latter occasionally so, with intervals of abstemiousness. I had a servant, a Cossack, born in Yakutsk, as all of them are in this district, having probably a mixture of native blood. The first of them who came north in 1620 had no women, and those in the whole are now supposed to have descended from the original adventurers who wandered north in that year. I called him by name when he happened to be leaning out of a window; as he did not hear, I advanced and touched him on the shoulder; he at once began to chatter, and was on the point of jumping out of the window; afterwards I repeated the experiment on him frequently, by simply pointing my finger at him or startling him, when close by, and suddenly calling sharply his name. He invariably begged me to desist. He also loved "vodka" and tea.

In Verchoyansk, at an evening party given by the police official, my attention was purposely called to two cases, presumably with the intention of amusing me. The officials' houses are the only properly constructed log houses in the village, the others being yourtas or low huts covered with earth and snow and ice. There are, besides the chief of police and his assistant, a priest, sometimes a doctor, and a few Russian exiles to be taken into account; the rest of the inhabitants are natives to the number of 100 or so.

From Holyma—much further East—occasional traders, two or three in number, pass to Yakutsk or vice versa. These latter are half-breeds, although they will not acknowledge it; so much for the surroundings. The fiddler at the entertainment referred to, the only musician for hundreds of miles around, was a Russian, and the apothecary of the village. When he was not playing, the company would amuse itself by watching one of their number persecute the poor, suffering fellow by simply pointing a finger at him, and others driving him for relief from one room to another. Sometimes he would beg to be let alone, and at others he would sullenly sit down and wait, but invariably move on even if he only suspected that the person advancing toward him intended to annoy him in the way described. He had lived in Verchoyansk for 30 years or more, if my memory serves me. We were warned not to irritate him while he was playing his fiddle, as in his paroxysm he would be apt to smash the instrument.

Another victim of the evening was a native woman (a pure blood Yakut) who acted as midwife in the village. She showed the peculiar symptoms, said to be common among the natives, when affected with this disease, of imitating anything her tormentor did. She could not be driven as the apothecary was, but if you pointed a finger at her, she would instantly point one of hers at you; if you sang a few notes (standing before her) she would repeat them. If you pulled a lock of hair, or pretended to, she would return on you the same way; if you uttered any gibberish, for instance, "Ha, Ha, Ha! Cha, Cha, Cha! Hi, Hi, Hi!"—she would instantly repeat it, leaning towards you imitating every movement you might have made, and at the same time making all sorts of grimaces. I was told that with such cases among the natives it would be dangerous to draw a knife across your throat, as if you were cutting it, as they would instantly repeat the operation on themselves and perhaps not with so harmless an effect.

These are the principal cases I can call now to mind. As said before, these poor people lead an indescribably lonely, mournful life. On the north coast, as you have probably

yourself experienced, the loneliness is emphasized by the awe-inspiring Arctic stillness. In Verchoyansk I have myself observed the thermometer for three days mark—87° F. and in Yakutsk it is little, if any, warmer ;—87° below zero is not exceptional.

Such is my recollection of what you would like to know.

P. S. I must add that, in all the cases herewith referred to, as soon as the exciting cause was withdrawn—whether it was a touch of the body, a loud, sharp cry, or the pointing of the finger, the subject would quickly resume his ordinary manner, after an interval of two or three minutes."

The ancient habit of tattooing is still common among school boys, sailors, soldiers, criminals and prostitutes living in so-called civilized communities. The practice, generally confined to a low grade of development and originating in perversion of the sexual instinct, is found pretty much over the world, notably in the Polynesian Islands and some parts of Japan ; and I have been struck with the similarity in design of the tattoo marks on the chins of women when visiting two places as far apart as Morocco and St. Lawrence Island. To anticipate criticism for mentioning what may seem a very trivial subject, I would say that tattooing is significant from a medico-legal point of view, no less a person than the Lord-Chief Justice of England having characterized it as a matter of vital importance.

As regard perversion of the sexual instinct and outrages on morals, our common humanity seems to have much the same aptitudes and instincts regardless of the points of the compass.

Even a superficial observance of the sexual morals of the Eskimo causes one to smile at Lord Kames's "frigidity of the North Americans," and at the fallacy of Herder who says, "the blood of man near the pole circulates but slowly, the heart beats but languidly ; consequently the married live chastely; the women almost require compulsion to take upon them the troubles of married life," etc. Nearly the same idea expressed by Montesquieu and repeated by Byron in "happy the nations of the moral North," are statements

so at variance with my experience that this fact must alone excuse a reference to the subject. So far are they from applying to the people in question, that it is only necessary to mention without going into details, that the women are freely offered to strangers by way of hospitality, showing a decided preference for white men, whom they think beget better offspring than their own men. In this regard one is soon convinced that salacious and prurient tastes are not the exclusive privilege of people living outside of the Arctic Circle; and observation favors the belief in the existence of pederasty among Eskimo, if one may be allowed to judge from circumstances not necessary to particularize, and from a word in their language signifying the act.

Coming nearer to home, we find that paranoia and general paresis are more common in the white race as they come under the civilizing influences of town life, the bad features of which are increased consumption of tea, alcohol and tobacco, exposure to venereal disease, and the unequal distribution of wealth. The same causes seem to have produced an anatomical determinism in the black race among whom suicide and insanity, rare before the civil war, are since more prevalent and on the increase.

I should not dwell longer on the matter were it not for the fact that my views on this and several of the foregoing points have been questioned by medical men.

It is a matter of simple arithmetic that demographic phenomena are acted upon by the civil state. As social causes make a race drift away from the primitive type and make a change in its advancement, there will be a corresponding pathological change. This has occurred in the British Army in India among the Sepoys, who, on quitting their own habits to take on those of the English soldier, are subject to the same diseases as their white comrades.

I have already shown from personal observation the frequency of cerebro-spinal affections among several of the yellow races; and were it necessary, I might adduce concurrent testimony of others to show the same frequency; for instance, of progressive muscular atrophy among Polynesians, insanity in China, and the extreme frequency

of progressive locomotor ataxia among Malays, a fact that has been dwelt upon by Dr. Van Leent of Sumatra.

While I am not in possession of enough clinical facts regarding the occurrence of progressive locomotor ataxia in the black race to warrant the formulation of any general conclusion relatively thereto, I can individually testify to the frequency of tabetic troubles in that race.

The first case of the kind to come under my notice occurred a few years since in a negro girl at the Central Dispensary of this place. It was called to my attention by a general practitioner who sought my views as to the diagnosis.

The next case, a coachman with a history of syphilis, was typical in every respect. It occurred in the practice of a prominent ophthalmologist of Washington, Dr. W. V. Marmion, by whom I was called in consultation. His attention was first arrested in a neurological way by the presence of the characteristic iridoplegic sign and the condition of the eye-grounds.

In a native of Hayti, formerly under my treatment, the symptoms were in an advanced stage, with gastric crises, and the like. A member of the French Legation in Washington informs me that this patient has since become insane.

Only a few weeks since another ophthalmologist of this city, Dr. Belt, who thought he detected a tabetic affection in the cerebroscopic sign furnished by the patient's eye, brought to my office a negro man from an adjoining county of Virginia, in whom locomotor ataxia was so well marked that the case would prove a fine one for a clinic.

I may mention in connection with the foregoing that I had lately a patient, a black man, with progressive muscular atrophy, the mass of posterior muscles about the thighs and buttocks being principally attacked. A case of African sleepy disease, or *nelawan*, in a negro boy, since dead, has also lately come to my knowledge. It is the more curious, since authorities say that this scrofulous encephalopathy (or whatever we chose to call it) has never been observed except on the coast of Africa and on the Congo particularly.

It is generally admitted that there is a greater tendency in the black race to certain nervous convulsive affections,

as tetanus and trismus, but we should scarcely expect to see reproduced nowadays the old Scythian malady spoken of by Hippocrates and Herodotus, and observed by contemporary travellers in the Caucasus. The thing has, however, lately come to light in Washington, where a band of negro men, with all the androgynous characteristics of the malady, was a short time since raided by the police. I have seen in the Government Hospital for the Insane a case of a black man in whom this neurosis was attended by a delusion as regards sex. In the same hospital a case of suicide in a young negro man has been reported by Dr. Witmer, who, in his interesting paper at the Berlin Congress, shows that under the same circumstances there is no race immunity from insanity, and that its relative curability is about the same in both white and black.

Medical statistics into which the element of politics has entered, or alleged disabilities plus the same element, being notoriously incorrect and untrustworthy, it would prove misleading to quote census returns or Pension-Office pathology in connection with the subject in hand. The figures of the Washington Health Office are, however, not open to the same objection. A cursory glance at the death list of the District shows that among people of color the decedents from nervous disease often exceed that of the white population one-third in the thousand. Since 1880, fifteen suicides are recorded among people of African blood, of which eleven were men and four women; and the record gives 208 deaths from insanity in the same people, 126 in men and 82 in women, all of which have occurred at a progressive rate since 1876, or within the last fifteen years.

I trust that the foregoing individual experiences, incomplete as they are, may call others to the study of pathological anthropology in its bearing upon a group of special affections that are not only less modified by race than by mesological causes, but ones that may be looked upon in the aggregate as the penalty that any branch of the human family must pay for being out of harmony with its conditions, more especially when coming under the complex social phenomena of modern civilization.

STATUS EPILEPTICUS.*

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IT should be a source of regret that a prominent writer and authority in medicine, in the description of epilepsy, in his work on practical medicine, makes this statement: "As regards the immediate danger from the paroxysms, the prognosis is always favorable;"¹ and, moreover, he makes but bare mention of the condition status epilepticus, when in reality it is the most serious phase epilepsy assumes. It is for the very reason that but comparatively little consideration has been given to this condition by the profession, excepting the medical men connected with institutions for the insane, that it has been chosen the subject of a paper, with the hope that, without being obtrusive, a somewhat systematic description and a few suggestions in regard to the treatment of such cases may be given, which may be of some interest and value.

The alarming mortality among epileptics, shown by the reports of our asylums and hospitals for the insane, and due in a great measure to status epilepticus, makes constant demands for new suggestions and ideas in the treatment of these cases; and when, moreover, it is taken into consideration that every individual, whether in an insane asylum or not, who has fallen prey to the as yet unexplained disease, idiopathic epilepsy, either in a mild or severe form, may at any time be attacked with this almost surely fatal phase of the disease, it would seem that any point, either in clinical history, pathology or treatment must be of interest to the profession, and certainly to the neurologist and alienist.

This paper has been prepared in the hope that it may possibly advance some new ideas, and at least be a reminder of this extremely serious phase of epilepsy.

* Read before the American Medical Association, May 5-8, 1891, at Washington, D. C.

¹ Flint: Principles and Practice of Medicine.

As to the cause or causes productive of idiopathic epilepsy, we must, as yet, say we do not know, and consequently the same statement must be made in regard to status epilepticus; so the treatment of these cases will of necessity be dependent upon theory and symptoms.

Whether or not epilepsy is an entity and has but one cause in its production, or is a disease resulting from a number of factors, it is well known that it varies in intensity from a form which but slightly interrupts the daily routine of life to one which utterly destroys the individual physically, mentally, morally and socially, and no matter how mildly the neurosis may exhibit itself in a special case, the individual has the taint or lesion, which at any time may be productive of violent convulsions, and in a few hours carry its victim into eternity.

It is as if one were standing near a comparatively innocent and harmless stream; but the bursting of a dam sets in motion the pent-up flood, and in an instant he is swept into oblivion.

If we accept the theory of J. Hughlings Jackson regarding the cause of epilepsy, viz., an over-discharge of nerve-force, or energy, from the brain cortex, we might define status epilepticus as a continuous, rapid and violent discharge of this nerve-force, followed by a condition of extreme stupor verging upon coma, or, in place of the stupor, a period of maniacal excitement, though this latter is extremely rare.

Status epilepticus can scarcely be considered a special form of epilepsy, nor is it at all correct to make it a distinct disease, but, on the contrary, it should be regarded as a climax of epilepsy.

A condition resembling status epilepticus may result in epileptics in whom the disease is caused by gross lesions, as tumors, cysts, etc., and to a considerable extent it is analogous to the epileptiform seizures, and consequent condition of parietic dementia; but it is not the purpose of this paper to treat of such cases.

In order to preserve as far as possible a systematic order

in the consideration of the subject, the following headings are given :

1. The clinical history.
2. Résumé of cases treated.
3. Notes of autopsies.
4. Prognosis.
5. Treatment.

The clinical history of status epilepticus, "*état de mal*," or "*les séries*," of the French, or, as Charcot calls it, "the epileptic acme," from observations made by the writers upon the cases to be cited hereafter, is as follows :

A rapid succession of convulsions, usually of "grand mal" type, with intermissions varying from a few seconds to a few minutes, and often following one another so closely that they resemble one continuous convulsion, the patient being in a stuporous or even comatose condition in the intervals.

The pulse and breathing are greatly accelerated, the former being weak and irregular ; there is deep congestion of the face and neck and intense throbbing of the carotids.

The temperature rises rapidly, until it has reached 104°–107° F., and there is often a difference in the temperature of the two sides, the greatest heat being on the side which is most convulsed.

As the convulsions increase in frequency and violence, there is a corresponding rise in the temperature and a deepening stupor or coma in the intervals. The conjunctivæ are insensitive ; the pupils are widely and (as a rule) evenly dilated, though occasionally there is a difference in size, and are not affected by light ; patient is bathed in a cold sweat, though the skin feels intensely hot ; sordes appear on the gums and teeth, and the bladder and bowels are involuntarily evacuated. This condition may last from one to several hours ; but, as a rule, the convulsive stage is of comparatively short duration, though occasionally it is prolonged.²

² One patient in the West Riding Asylum had 1,849 convulsions, covering a period of fifteen days. Delasuiave reports a case where the first stage lasted a month, the patient having 2,500 fits. A patient in the Northern Michigan Asylum had 3,000 in three weeks.

Death may occur in this stage from exhaustion, or the convulsions may cease and the patient pass into the second or stuporous stage.

This stage is characterized by an intense stupor, total abolition of sensation and motion, exceedingly depressed heart's action, and a consequent dyspnœic condition. The temperature remains above normal, though not as high as in the convulsive stage.

There is paralysis of the muscles of deglutition, very often irritability of the stomach, and sometimes profuse diarrhœa; bed-sores appear; the tongue is dry and coated; increasing sordes on the teeth and gums, and, in short, everything points to a rapid dissolution. The second stage lasts from one to several days.

Charcot³ makes two classes of status epilepticus, viz., "the minor acme ('les petites séries'), constituted by from two to six fits, and the major acme ('les grandes séries'), in which from twenty to thirty fits have been reckoned in the twenty-four hours." It would hardly seem that this division is necessary, for the very reason that it is an extremely rare occurrence for from two to six fits to produce the stuporous stage of the status proper. Evidently Charcot regards the convulsive stage as constituting status epilepticus without including the comatose stage. Hence his two classes.

Rosenthal⁴ gives the following description: "Another severe form of epilepsy is described under the name of status epilepticus. It presents the following characteristics: Rapid succession of attacks, presenting slight remissions and without return to consciousness (convulsive stage); a comatose condition secondary to these attacks, with abolition of reflex power, except during short periods of temporary increase (meningeal stage); more or less complete and permanent hemiplegia; acceleration of the pulse and respiration; and especially a marked elevation in temperature (40°-43° C.), which persists even in the intervals of the

³ Charcot: Diseases of the Nervous System.

⁴ Rosenthal: Diseases of the Nervous System.

paroxysms, and may increase after their disappearance. The duration of these attacks may vary from three to nine days; more than one-half the cases terminate in death."

Putzel⁵ gives the clinical history in the following words: "The prodromata do not differ in any respect from those which are usually experienced by the patient prior to the ordinary attack of convulsions; but the fits, instead of ceasing, follow one another rapidly, and before the epileptic coma has entirely disappeared, another convulsion makes its appearance. The intervals between the fits become shorter and shorter, until they run into one another, and finally the patient appears to be in one long-continued convulsion.

"The pulse is regular, but usually small, the respirations become frequent and labored. The temperature begins to rise from the very beginning, and may rapidly reach a height of 104°, 105° or 107° F., and upward. The skin is hot and scorching, the face is covered with an abundant, viscid sweat. Marked nystagmus is present, and the face and neck may be drawn to one side. The pupils are dilated, either equally or unequally, and do not react normally to light.

"After the convulsions have lasted some time, hemiplegia develops in a large number of cases, the face and limbs being affected as in ordinary hemiplegia. . . . The sensorial and intellectual functions are totally abolished, and the patient lies in a profound stupor, which often deepens into coma." . . .

Secondary or Meningitic Stage.—"At the close of the first stage the convulsions become more infrequent, and finally cease, but another series of symptoms develop. The intelligence is more or less affected, and the patient is in a condition of hebetude or coma." The author goes on to say that in this stage the coma may be replaced by maniacal excitement, general disturbance of nutrition, emaciation, bed-sores and a gradual dissolution or an extremely slow recovery.

⁵ Putzel: Functional Nervous Diseases.

Bevan Lewis⁶ describes it as follows: "If the attacks succeed each other rapidly and consciousness is not restored between the convulsive seizures, if fit succeed fit at intervals of a few moments only, the patient remaining comatose, we have developed what is termed the status epilepticus, a condition of most serious import.

"The pulse and breathing become quickened; . . . the temperature rises to 105° or 107° F., with deepening coma or stupor. . . . As the fatal termination approaches, the convulsions become more frequent, a few seconds only intervening between each discharge, so at times they appear almost continuous, a fresh discharge being only recognized as a slight increase in the intensity of the convulsions.

"When this period arrives, however, the epileptic discharge becomes progressively feeble, and the fit may be characterized by a slight turning of the head and eyes to one side, with slight clonic movements of the limbs or merely convulsive twitchings of the mouth, with conjugate deviation. The conjunctivæ are, of course, quite insensitive, the pupils being widely dilated and fixed to the strongest glare of light, while the face and body are bedewed with a cold sweat. Often the temperature exhibits unilateral deviations, being highest by a degree or more on the side first (or most) convulsed. If the patient recover, the fall of temperature is most rapid on this side until a balance is established, and subsequently an equal and continuous decline of temperature proceeds on both sides. . . . The mortality from status epilepticus is said to be due to (a) collapse and (b) to meningitis." . . .

Bourneville⁷ in his treatise characterizes status epilepticus: (1) by the frequent repetitions of the convulsions, which may even become almost continuous with one another; (2) by a variable degree of collapse, which may deepen into a most profound coma, unattended by any return to consciousness; (3) by a more or less complete hemiplegia, developing after a variable duration of the

⁶ Bevan Lewis: *Text-Book of Mental Diseases*.

⁷ Bourneville: *Études Cliniques et Thermométriques sur les Maladies du Système Nerveux*, 1873.

symptoms; (4) by increase in frequency of pulse and respiration; (5) by considerable elevation of temperature, which persists in the brief interval between the convulsions. He, with others, divides it into two periods—a convulsive and meningitic.

Calmeil, Trousseau, Delasuiave, Gowers, Webber and Blandford give more or less on the subject; but as their statements are covered by the authors already quoted, it is useless to give them here.

Twenty cases of status epilepticus have come under the observation of the writers; but only twelve are cited, as the remaining eight would only be repetitions of the others:

CASE I.—Male, aged 25; congenital imbecile; family history shows marked neurotic taint; had scarlet fever when fifteen years of age, and soon after recovery epilepsy appeared; has had an average of ten fits a month since development of the neurosis; physical condition much impaired. During November, 1888, had three fits; December, eleven, and January, twenty-four.

All of this time he was taking a mixed tonic and bromide treatment. On February 24th, at 2 P. M., after an interval of several days without fits, he had a severe convulsion, followed by others in rapid succession, averaging one every two minutes for the first hour. At 3 o'clock his temperature was 102° F., respiration 30, pulse 106, skin hot and covered with perspiration, pupils dilated equally and not reacting to light, face much congested; unconscious, though not having a convulsion at that time. Ether was given and carried to surgical anæsthesia, with a cessation of the convulsions. Given chloral hydrate, grs. xxx., by rectum. Slept well until 9 P. M., but on awakening he immediately went into a series of convulsions, having thirteen in twenty minutes. At 9.30 P. M., temperature was 104° F., respiration 35, pulse 130. Ether was again administered, and morphinæ sulph., gr. $\frac{1}{4}$, hypodermically. February 25th: Slept during the night. This morning he lies in a stupid condition; temperature 105.6° F., respiration 41, pulse 129, cold sweat over entire body, pupils dilated and insensible to light. Given nourishment and stimulants by stomach-tube. Remained in this condition until death, at 5 P. M. Duration of attack, fifty-seven hours; number of convulsions, forty-three.

CASE II.—Male, aged 28; congenital imbecile; had scarlet fever when ten years old, and immediately after

developed epilepsy; no known heredity. During February, March and April, 1889, he had one fit while under tonic treatment. On May 2d, between 1 and 5 A. M., he had one hundred and six convulsions. At 5 A. M., temperature was 104.5° F., respiration 32, pulse 130. The fits followed each other with very short intervals, the patient being unconscious. Chloroform was administered, and continued for a half hour; ol. tiglini, gtts. iii., followed by profuse evacuations. In this case the convulsions were general, but stronger on the right side; right hemiplegia followed the attack. Patient sank into a stupid condition, which lasted five days. During this time the temperature and pulse were constantly above normal, the gradual return to consciousness being preceded by an even fall of temperature. Sordes collected on the teeth; tongue brown and dry. The reflex action of the eyes was lost, and death seemed imminent. Stimulants and nourishment were given constantly by the nasal tube. On the fifth day he recovered consciousness; the temperature slowly fell to normal. Rapid improvement followed, and in ten days he was able to be about the ward. The total duration of the convulsive and comatose periods was about ten days; number of convulsions, one hundred and six.

CASE III.—Same patient as Case II. On October 27, 1889, was found in the morning in a comatose condition, which, without doubt, resulted from his having passed through the convulsive stage of status epilepticus during the night. Temperature 105° F.; impossible to arouse him from the deep coma; pulse weak and intermittent. Stimulants and nourishment given per nasal tube. The physical exhaustion was so great that the man sank rapidly, and died eight hours after first being seen.

CASE IV.—Male, aged 30; neurotic family; epileptic from childhood; no specific history; in good physical condition. Has had several attacks of status epilepticus, of which no record has been kept. These attacks were all marked by the large number of convulsions, their severity, the rapidity of their occurrence, and the short intervals between them. On February 21st, at 3 P. M., the convulsions began while the patient was outdoors. When first seen, he had had fifteen convulsions within a half hour and was in an extremely exhausted condition. Temperature 102° F., pulse small, body covered with cold perspiration. The convulsions were general and of uniform severity on

the two sides. Coninæ hydrobrom., gr. $\frac{1}{100}$, was given hypodermically. One convulsion followed the injection, after which the patient sank into a quiet sleep lasting six hours. On awakening, his condition seemed much improved; temperature 99.8° F., pulse 106; conina, gr. $\frac{1}{100}$, with digitalin, gr. $\frac{1}{100}$, given hypodermically. Slept during the night without convulsions. Next morning he was much better, though very weak. Stimulants and nourishment. Two days after was about the ward as well as before the attack.

CASE V.—Same patient as Case IV. On April 15th had twenty convulsions, followed by great exhaustion. Given ether to anæsthesia, chloral, grs. xxx., by rectum. At intervals for twenty-four hours he had convulsions of a more or less severe character, followed by stupor, from which he could not be aroused. Stimulants, nourishments, injections of ether, digitalin and atropiæ sulph. were given without effect. Patient gradually failed, and died ten days after. The highest temperature in this case was 105.2° F., which occurred just before death. For some weeks before each of these attacks the patient had been taking bromide treatment.^s

CASE VI.—Male, aged 45; no known heredity; cause of epilepsy unknown; bodily in good health; weight 170 pounds; has very few epileptic convulsions, usually not more than six in a year; during the four months before the attack had three convulsions; several previous attacks of status epilepticus. This attack began on May 4, 1889, at 7 A. M., and in one hour he had thirty-two convulsions, which were continuous, the intervals between the fits being marked only by a slight diminution in the severity of the convulsions. At 8 A. M. there were no signs of exhaustion; temperature 100° F., pulse 90. Given ether to anæsthesia and morph. sulph., gr. $\frac{1}{5}$, hypodermically. No diminution in convulsions except while under ether. At 9.30, chloral, grs. xxx., by rectum, after bowels had been moved by enema. At 11 ether was given and carried to surgical anæsthesia, without effect. At 12 coninæ hydrob., gr. $\frac{1}{100}$, hypodermically; a few minutes after he had a single fit, and this was followed by sleep. This same dose was repeated at 6 and 9 P. M. Slept all night. No convulsions in the morning, no excitement. An interesting feature of

^s Bromide of ammonia, bromide of sodium, aa, gr. xv., suspended in a tonic mixture, t. i. d., and a pill of oxide of zinc, extract of belladonna, aa, gr. 3 4, at night.

this attack is the absence of excitement, which has always before followed status epilepticus in this patient.

CASE VII.—Admitted July 8, 1889. Male, aged 38; family history of insanity and epilepsy. On January 4, 1890, was attacked with status epilepticus, though since admission has only had five convulsions; fits followed each other so closely that attendants were unable to count them. When first seen, the convulsive stage had nearly ceased. Ether was administered, and morphine hypodermically. The convulsions were stopped entirely, but the man died in the second stage from exhaustion forty-eight hours after the commencement of the attack.

CASE VIII.—Male, aged 26; no known heredity; a deaf-mute; febrile disease in early childhood is the supposed cause of epilepsy; has had an average of five epileptic fits a month while under a mixed tonic and bromide treatment; physical condition is usually good, but at present somewhat impaired from constant use of bromides. May 25th had a series of convulsions in the night, number unknown, but when first seen he was passing from one fit to another without any marked interval. Given hyoscine hydrobrom., gr. $\frac{1}{100}$, hypodermically, at 4 A. M. Slept until 7 A. M., and was then awakened by a convulsion, which was immediately followed by others; given amyl nitrite by inhalation, without effect; ether administered, and chloral, grs. xxx., per rectum, with but a temporary cessation of convulsions; 12 M., coninæ hydrobrom., grs. $\frac{1}{100}$, hypodermically, after which the fits ceased and sleep ensued. At this time his physical condition was bad; temperature 104° F., pulse 142, body covered with cold perspiration, face cyanotic, hands and feet cold. At 9 P. M. he was somewhat restless, although there had been no recurrence of the convulsions; slight muscular movements in different parts of the body. Given nourishment and whiskey per nasal tube, an enema, digitalin and coninæ hydrobrom., aa, gr. $\frac{1}{100}$, and atropinæ sulph., gr. $\frac{1}{100}$, hypodermically. Slept during the night without a convulsion, and is less stupid this morning; takes nourishment and stimulants. From this time he improved gradually, and in five days was about the ward again.

CASE IX.—Same patient as Case VIII. For past two months has had no convulsions under a mixed tonic and bromide treatment. August 20th, at 2.30 P. M., an attack began similar to the last; physical condition much better than at time of last attack. When first seen had had thirteen

convulsions; temperature 100° F., pulse 110. Given coninæ hydrobrom., gr. $\frac{1}{100}$; slept until evening without convulsions and was in good physical condition; takes nourishment this morning, and was able to be about the ward on the following day.

CASE X.—Male, aged 46; family history shows a predisposition to nervous disease; duration of epilepsy unknown; has a history of syphilis twenty years ago, but there is no indication of cerebral disease or that his convulsions are not true epilepsy. At the time of his attack he had had no convulsions for several months. On December 16, 1890, had three fits in the afternoon, followed by seven in the evening, without physical failure. At 9 P. M. given coninæ hydrobrom., gr. $\frac{1}{100}$; slept during the night without recurrence of the fits. At 8 A. M. convulsions again occurred the same in character as before. Given chloral, grs. xxx., and potass. bromide, grs. 60, by stomach, without effect; also morph. sulph., gr. $\frac{1}{3}$, and atropiæ sulph., gr. $\frac{1}{60}$, with the same negative effect; at 11 P. M., coninæ hydrobrom., gr. $\frac{1}{30}$, with an immediate cessation of the convulsions. Patient rapidly improved, and in two days was in his usual health.

CASE XI.—Male, aged 45; family and previous history unknown; has had previous attacks of status epilepticus, all having two points in common, viz., (1) the large number of fits and their rapid occurrence, and (2) a state of secondary consciousness following such attacks in which the patient was greatly excited and very brutal; violent to any one who came near him. Physical condition good; has had three fits in the last three months. On May 10th, at 4 P. M., he had a severe convulsion, followed by others with intervals of about two minutes between them. At 4.20 he was etherized, after taking chloral hyd., grs. xxx., and potass. bromide, $\bar{\text{z}}$ i. On coming out of the anæsthetic, no convulsions occurred until 5.30 P. M. At 6 he was given coninæ hydrobrom., gr. $\frac{1}{100}$. Slept during the night without convulsions. No attack followed this, and the man rapidly returned to his usual condition. The highest temperature during this attack was 104° F., pulse 110.

CASE XII.—Same patient as Case XI. Physical condition impaired; no convulsions for several weeks. September 30th: had twenty-three fits between 11 A. M. and 12.30 P. M. Given coninæ hydrobrom., gr. $\frac{1}{100}$. Convulsions ceased. Slept until 7 P. M., when the convulsions again commenced;

conina repeated with same good result. October 1st: had several severe convulsions, followed by unconsciousness, stertorous breathing and right-sided hemiplegia. After being in this condition for about fifteen hours, death occurred. Temperature in this case ranged between 103° on the first day of the attack and 107° at time of death.

Such are the histories of twelve attacks of status epilepticus.

Of the twenty cases which have come under our care, four were examined post-mortem.

These examinations showed certain points common to all: (1) a lack of symmetry in the two hemispheres, which is so often found in epileptics; (2) an inequality in the weight of the two hemispheres, also quite common in epileptics; (3) more or less extensive decortication; (4) intense engorgement of the brain and its membranes—the sinuses were filled with blood, the vessels of both the dura and pia were distended, the brain on section showed the puncta vasculosa to a marked degree; (5) in all four cases, and especially marked in two, serous effusion into the ventricles and arachnoid space

In one of the cases there was softening of the first and second temporo-sphenoidal convolutions on the right side. In another, which showed all the symptoms of apoplexy toward the end of the attack, a large hemorrhage from the middle cerebral artery on the left side was found.

In a third case, in which death occurred instantly and during a convulsion, a small hemorrhage was found in the medulla.

In none of these four cases was the cause of the status epilepticus found, and in only two was there evidence of the immediate cause of death. The others, in all probability, died from the exhaustion consequent upon the convulsions.

The prognosis of status epilepticus is very unfavorable, the mortality being estimated at fifty per cent. The violence and frequency of the convulsions, the high temperature; the rapid, weak and irregular pulse; the consequent comatose condition, with its accompanying extreme de-

pression, are all factors of such grave import that the outlook in most cases is very serious. Besides this, we must take into consideration the mechanical action brought into play, viz., the intense and powerful contractions of the muscles during a convulsion, which, by exerting an irresistible pressure on the vessels, force the blood into the cerebral vessels, thus producing the great engorgement, with imminent liability to cerebral hemorrhage.

Even though the individual passes safely through the status, hemiplegia often results, leaving him in a weak and helpless condition, and totally unable to withstand a second attack.

The three most probable modes of death are: (1) exhaustion; (2) from cerebral hemorrhage; (3) from serous effusion.

Treatment.—In a condition like status epilepticus, where the life of the individual may be destroyed in a few hours, any measure which will abort the attack is of the greatest importance. Our treatment must be chiefly symptomatic, at least until more is known of the pathological condition than we know at present. There are two important indications for treatment which must be met in each case: (1) to bring the convulsive period to an end as quickly as possible, and (2) to sustain the life of the individual through the stupid or excited period which may follow the attack.

(1.) In order to meet the first indication for treatment, a large number of drugs have been tried, with a view of depressing the motor centres of the cerebrum or cord, or of paralyzing the efferent nerves, or all of these, and thus preventing a fatal termination, either by diminishing the number of convulsions, making them less severe, or preventing them altogether. Among the therapeutic measures suggested to fulfill this indication, we shall consider only those with which we have had personal experience in our own cases. These include the following: Ether, chloroform, chloral hydrate, bromide of potassium, nitrite of amyl, sulphate of morphine, sulphate of atropine, hydrobromate of hyoscyne, salicylate of physostigmine, and hydrobromate of conine.

Ether and chloroform are given with the purpose of immediately stopping the convulsions by paralysis of the motor centres of the cerebrum and complete muscular relaxation.

However successful these may be in the convulsions of Jacksonian epilepsy, in our experience in cases of idiopathic status epilepticus they are but temporary measures, the convulsions ceasing only when the point of surgical anæsthesia has been reached, and coming on again before the patient has regained consciousness. They are of great use, however, in preventing the convulsions when exhaustion is imminent, while waiting for some other agent to act. Either may be used; but in a case where the heart and respiration are already in a weakened condition, ether would be the safer.

Chloral hydrate by the rectum has succeeded in some cases, but has more often failed. In giving this drug, it has been the custom to keep the patient under an anæsthetic during its absorption, giving grs. xxx., and repeating it in an hour if necessary. Although acting as a depressant of the spinal cord and brain, yet the amounts which can be given with safety are usually too small to produce the desired effect. We have not used it hypodermically, but it seems probable that used in this manner the results would be much better.

Bromide of potassium has been given in several cases in combination with chloral hydrate, but without any good results. If, as in several of our cases, status epilepticus follows a course of bromide treatment, very little could be expected from it, and indeed, in any case, its action is so slow that but little could be hoped for from its use. In the few cases in which we have tried it, it has been given in doses of ʒ i. - ʒ ii.

Nitrite of amyl is highly recommended by some authors; but repeated trials have failed to establish its value. It has been given by inhalation, ℥ x., repeated at intervals. Although undoubtedly useful in preventing an impending convulsion of ordinary epilepsy, it has proved of but little value in the cases of status epilepticus in this hospital.

Sulphate of morphine has succeeded in one case in which gr. $\frac{1}{3}$ was given hypodermically during ether anæsthesia; but in several other cases in which it was used it failed to change the course of the attack in any appreciable way, although given in doses of gr. $\frac{1}{4}$ – $\frac{1}{2}$, hypodermically.

Sulphate of atropine, in any safe dose, acts strongly upon the cardiac and respiratory centres and upon the pneumogastric nerve, but very slightly on the motor nerves of voluntary muscles. Carried further than this, it stimulates the cardiac sympathetic and paralyzes the pneumogastric, and in consequence there results a rapid heart failure. For this reason it is impossible to stop the convulsions without cardiac failure. Its immediate effect has been good by its stimulating action on the vagus and the resultant improvement in the character of the respiration and circulation. Although it has been used with a view to stopping the convulsions, it is of more value in the second stage of the neurosis.

Hydrobromate of hyosine, if given in sufficient amount hypodermically, produces almost immediate sleep, affects the motor tract of the spinal cord and cerebral cortex, and in a case in which its use is not contraindicated by weakness of the heart or respiration, its employment promises good results. In the cases in which it has been used, the convulsions have quickly ceased, the heart's action has been slightly depressed after a short time, the respirations have been more frequent and less full, and sleep has followed, lasting from two to eight hours, with a recurrence of the convulsions on awaking, and an improvement has occurred in the patient's condition. Although hyosine has failed to bring the attack to an end in any of these cases, yet the rest and freedom from convulsions for several hours, with the resulting improvement in the bodily condition, would indicate its use as a temporary measure. It has been given in doses of gr. $\frac{1}{80}$ – $\frac{1}{100}$, hypodermically, its success in acute mania when given by this method, and its almost complete failure when given by the stomach, suggesting a similar result in status epilepticus.

Salicylate of physostigmine, gr. $\frac{1}{60}$, was given in one case with a view of depressing the cord sufficiently to stop the convulsions, but without success.

Hydrobromate of conine was first used in a case in which most of the other measures in this list had failed, and its use was followed by an almost immediate cessation of the convulsions. Its action is from the periphery, extending toward the centre, the motor nerves being chiefly affected, the sensory nerves remaining almost unchanged. When a case in which it has been given is carefully watched, the following results are noticed: (1) weakening of the convulsive movements, beginning at the lower extremities, extending upward over the trunk and upper extremities, and last the head and face, with finally a complete cessation of the movements if a sufficient amount has been given; (2) slight dilation of the pupils and ptosis; (3) some impairment of general sensibility; (4) heart slow and full, respiration slow and labored; (5) combined with sulphate of morphia, sleep follows, lasting several hours; (6) if the convulsions are to return, as the influence of the drug is lost, fibrillary contractions, beginning above and passing downward—that is, in the opposite direction from what they ceased—and finally the general convulsions are reëstablished. This drug has been given in small doses, gr. $\frac{1}{60}$ — $\frac{1}{40}$, hypodermically, and repeated as often as indicated, the administration being guided by the character of the respiration. It has usually been combined with sulphate of morphia to produce sleep, and sulphate of atropine to act as a stimulant to the respiratory and circulatory organs, and also at times with digitalin and hyoscine. Only two of the cases in which it has been used have terminated unfavorably. In the first it stopped the convulsions; but they recurred, and cerebral hemorrhage complicated the case. In the second case it was given as were all the drugs mentioned, the only measures attended with any success being the administration of ether and chloroform, until there was complete muscular relaxation; and in this case the patient died suddenly, while in a fit, from hemorrhage into the medulla. In several of the cases, conine and a small amount of morphia have been

the only drugs used. Although it failed to control the convulsions in one case, yet it has been the most successful method of treatment tried, and its results encourage us to believe that it will succeed in the majority of cases of status epilepticus.

(2.) The exhaustion of the patient gives the second indication for treatment. In almost every case of status epilepticus, before the convulsions can be controlled there are evidences of physical failure; the pulse is rapid and weak, the respiration shallow and increased in rapidity, the temperature raised several degrees above normal, and a profuse perspiration covers the body, all of which call for immediate treatment in order to carry the patient through the dangerous period. The condition of the patient usually prevents the administration of food or medicine by the mouth, although if introduced into the stomach they will be retained. To fulfill this indication, we have introduced two methods: (1) the hypodermic use of such agents as atropine, digitalin, spt. frumenti and quinine sulph.; and (2) the introduction of milk, eggs and stimulants into the stomach by means of the nasal and stomach tubes, on account of the inability to swallow: artificial introduction of food into the stomach being especially called for in cases in which the stupid or excited periods are of several days' duration.

The conclusions drawn from this paper are as follows:

1. On account of its association with epilepsy, status epilepticus should not be considered a distinct disease, but merely a climax of the neurosis.

2. It consists of two stages: (1) a convulsive, and (2) a comatose, though the latter is sometimes replaced by a period of maniacal excitement.

3. That there is no demonstrable lesion causative of the status.

4. That the prognosis is unfavorable.

5. That the treatment is in a measure symptomatic, but considerable reliance can be placed upon the hypodermic use of the hydrobromates of hyoscyne or conine combined with the sulphate of morphine.

THE PEOPLE vs. SADIE McMULLEN—A MEDICO-LEGAL CASE.

By WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

ON the evening of October 31st (Halloween night), 1890, there occurred in the little town of Akron, N. Y., a tragedy which has seldom if ever been equalled in the western part of the State. The ages and sex of the unfortunates as well as of the guilty one, and the circumstances surrounding the affair, created a sensation for many miles around. The supposed motive—a woman's jealousy—which was at the outset universally accepted, quickly subsided when the medical status of the case was established. The peculiar mental condition of the prisoner at the time of the homicide, and the unusual amount of psychopathic tendencies which have coursed through the veins of her ancestors, will, I trust, warrant the rather extended review which has been made of the case.

Sarah Ann McMullen: age, nineteen years; single; height, five feet, four inches; weight, one hundred pounds; complexion, fair; hair, black; constitution, frail, petite, feeble; countenance, dull, clouded, expressionless.

Antecedents.—Paternal side: the grandparents were first cousins, their fathers having been brothers. The grandfather¹ was a hard drinking man, "drinking mostly whiskey, sometimes beer and cider." He suffered with delusions and had the doors and windows of his bedroom securely barred. At times he would walk about with a gun, for fear of someone attacking him. He would sit at the table with a loaded gun over his knees. During his last illness he accused certain members of the family of putting poison into his food. He died with the bloody dysentery. The grandmother used to have spells when she would complain of her head; "seemed as if it would burst." She used to drink

¹ The different members of the family are designated by the relationship which he or she bears to Sadie.

considerably "mostly sling and beer." She is supposed to have died from heart disease. Nothing further can be elicited in regard to the grandfather's lineage.² On the grandmother's side one grand-uncle and two grand-aunts died of brain trouble. One of these grand-aunts was stated to have been a victim of insanity. As a result of this union six sons and seven daughters were born. On the male side four are living and two are dead; of the latter one died with the small-pox, the other at the age of four years with "worm fits:" He could neither walk nor talk, and was obliged to have, his hands bandaged so that he could not inflict injury upon himself. He was regarded by all as idiotic. Of those living, father and three uncles, one uncle, James F., has been insane for many years and was thought to have been born so. He is at present an inmate of the Buffalo State Hospital, under the care of Dr. J. B. Andrews, who states that he was admitted December 3d, 1882, and is suffering with dementia. Two uncles are considered to be in good health. The father's history will be reviewed later on. Of the seven daughters, aunts to Sadie McM., four are living and three are dead. One aunt died in childbirth and was always looked upon as "light in the head." Of the four aunts now living, one, Julia, was taken insane fifteen years ago and sent to the Utica State Hospital. She was dismissed one year later. On March 9th, 1883, she was admitted to the Buffalo State Hospital. In a letter concerning her condition, Dr. Andrews writes: "She entered the hospital with a history of having had one prior attack of mania some eight years before (1875). She remained in the hospital till December 3d, 1884, when she was discharged recovered. She was returned on February 14th, 1887, suffering from another attack, of mania, and was discharged again, recovered January 2d, 1888; returned July 24th, 1890, and discharged August 8th, 1890. This, like her previous attack was one of mania."³ A son of this lady,

² Since writing the above, it has been ascertained that the great-grandfather was an inveterate drinker.

³ Dr. Andrews informs me that she was re-admitted to the hospital, a few days ago, suffering with melancholia.

cousin to Sadie McM., is also insane and has been in the Buffalo State Hospital. He is at present in the insane department of the Erie County Almshouse (Nov. 1st, 1890). One aunt residing in the West is subject to raving spells, and at such times is wholly irrational.

Two aunts appeared at the trial and gave testimony. One of them testified that when a child she would have fainting spells while at play and suddenly fall down without any warning. She could remember nothing of what transpired during the attack. She appears to be at present in good health. Another aunt appeared several times before the writer, and although exhibiting no symptoms of derangement in her conversation, yet her countenance showed plainly the effects of a deranged development. Her skull was of the dolicho-cephalic variety with projecting lower maxilla. There was a slight impediment in her speech, and her command of language limited.

The grandparents on the maternal side were of Irish birth, Hogan by name. The grandfather was a British soldier for twenty-five years and died at the age of sixty with consumption. The grandmother died of fright. As a result of this union, we have the mother of Sadie, three aunts, and two uncles. "The aunts died of colds." The whereabouts of the two uncles is unknown. One of them is said to have been a wild, reckless fellow, and had odd spells at times. The mother of the patient was born in Canada, and at the age of sixteen married William F. McMullen. She gave birth to a male child about a year after marriage, but it soon died. Three years after marriage, Sadie was born in the eighth month of pregnancy. Another daughter, Josephine resulted from this wedlock. The mother was an irritable, quick-tempered, troublesome woman, with suicidal and homicidal tendencies. She would have spells, in which it would require much strength to keep her under restraint and from doing others bodily injury. She would "scream, kick and yell," and on several occasions tried to kill her half brother. She has had cramps, where her hands would become rigid, her eyes fixed, and for the time would be unable to utter any sound. At the age of twenty-three years while

crossing a piece of woods in Wisconsin, she saw a bear and ran thoroughly frightened to the nearest house. She died soon afterwards, Halloween night, 1876, presumably from the shock. The father, Wm. F. McMullen, was born in 1842, and is consequently 48 years old. He married for the first time at the age of 26. He is possessed of a roving restless disposition, working at odd jobs now in Canada, then in Michigan, Missouri, Wisconsin, Illinois, New York, etc., wherever his inclination and wanderings carried him. His present domicile is at Akron, N. Y. He has been a hard-drinking man his whole life time and has never attempted any reform in this direction. He has devoted little or no time to his family, has always been stern and austere, and made his home one of misery, poverty and wretchedness.

The sister of the patient, now fifteen years of age, is a frail, delicate young lady, and up to the present time offers nothing unusual.

Early History.—Sadie McMullen was born in Chicago, January 6th, 1873, and lacked a few weeks of full term. She was a puny, weakly baby, and it was with much difficulty and attention that her life was preserved. When two years of age, an incident occurred which fanned into flames the smouldering embers of her tainted heritage. On coming home from work one evening, the father discovered some rats behind a wire cupboard. He let in the dogs, and there ensued a scene better imagined than described. While at its height, Sadie, who was sleeping on a couch in the room, awoke, and fell instantly into a crying spell, then laughed, clapped her hands, and fell back upon the couch apparently in slumber. On trying to awaken her, "she had a fit," frothed at the mouth, straightened out, then threw her arms and limbs wildly about. During the night she had several such attacks, and on the following day many more.

A physician who was called in to see her, pronounced them as epileptic, and began a course of treatment. The attacks soon took on a modified form, becoming more or less

epileptoid⁴ in character. She has had many of these, and only a few characteristic ones, will be here enumerated.

While in Wisconsin, the patient, then four years old, would wander away generally to the woods near by, and remain a long time. On coming home, she would receive punishment, and would ask: "Pa, why do you whip me." On being told that she ran away, she would say: "I didn't run away," disclaiming all knowledge of the act. Later on she would complain of feeling so large, and everything about her so small, and tearing off her clothing, would try to escape. These spells happened quite frequently during her stay in the West.

Desiring to explore the East, the father with his little family, consisting of Sadie, then 12 years old, the younger sister, and half-brother, began the journey on foot, starting from Missouri in the spring of 1884. The progress was slow and the accommodations poor. Many nights they were compelled to sleep out of doors, foregoing food and drink, suffering hardships illy appropriate for a victim of epileptic tendencies. Several attacks occurred on this pilgrimage, in every case portraying that roving, wandering disposition so typical of epileptoid seizures. During her sojourn in Missouri she suffered a severe attack of whooping-cough. In the fall of 1884 they arrived at Akron, N. Y., and have since made it their home, the charge of the household devolving upon Sadie.

Several noteworthy episodes occurred from time to time, either in the antics of the father or outbursts of the daughter. The prisoner related how one afternoon she was surprised to find herself on a ladder picking cherries several miles away from home. At another time she found herself in a woods picking berries, without the least knowledge of how or when she got there. One day she came home scantily dressed, with part of her clothing under the arm drenched in water, equally unconscious of where she had been. The sister and father describe many attacks where the patient would lose consciousness and move about in an

⁴ Synonyms: Double consciousness; psychical epileptic equivalent; automatisme comital ambulatoire.

automatic manner, sometimes strolling to the woods, sometimes along the creek, returning, and growing indignant when confronted by the accusation. Nocturnal attacks were very frequent, and the patient tells how sometimes when feeling them coming on, she would get up and try to ward them off.

When sixteen and one half years old she menstruated for the first time and was quite prostrated. She has always been very irregular, and has had slight epileptic seizures, preceding and during these periods. Her last menstruation occurred a few days prior to the homicide.

She made the acquaintance of two brothers at Akron, one of whom, the younger, was single, the older, married. There appears to have been some mutual friendship between the younger brother and the prisoner, but no pledges had been given or received. She was a welcome visitor in the family of the married brother, and on the death of the wife was employed for some time as house-keeper. This family consisted of father (Simon Brown), sister (Hannah B.), and a little daughter (Delia), aged six years. Between the latter and Sadie there existed a feeling somewhat akin to maternal love. The relations between the father, the aunt, and the prisoner were defined by them on the witness stand as being most cordial. There lived also at Akron a widow lady (Connors), friend to the Brown's and to Sadie. She, too, had a daughter, Nellie May, aged ten years. Between the father of the first family (Brown), and the widow lady (Connors), according to the testimony given there was no *affaire de cœur* whatever, so that the prisoner could not have entertained the least suspicion of any alliance were she so inclined.

Owing to misunderstandings between father and daughter, Sadie has spent the past year away from home, generally in Buffalo, either visiting with her aunt, or in employment as a domestic. Her aunt describes her as cowardly, superstitious, easily frightened, and a firm believer in dreams and in ghosts. On many occasions she has noticed a peculiar expression creeping over Sadie's face, rendering her unconscious for a few moments. These attacks of

petit mal occurred most frequently at or near her menstrual periods or when laboring under some undue excitement.

Present History:

On the Saturday preceding October 31st, 1890, she left Buffalo for Akron for the purpose of attending a Catholic fair. She made her home at the Brown house, and all agree that they passed a very happy time together. The fair passed off pleasantly, nothing happening to mar the kindly relations between the Brown family and their visitor. For some reason or other Sadie left her purse while at the fair with a friend living in Fallkirk, a suburb of Akron.

On Wednesday, October 29th, 1890 the prisoner wrote a letter to her aunt in Buffalo, which is here appended in full:

AKRON, N. Y., Oct. 29th, 1890.

MRS. P. MORGAN,

Dear Aunt: I will write and let you know that I am well and I think all the rest are. I sopose Susie is there. I didn't get any letter from Sweeney and I dont care if I never hear from him, I wont look at him when I come back he will find that I aint as soft as I look, I hate the paddy's anyway.

I hope you are well so I think I will close, write soon I remain your loving Niece.

SADIE,
Scotch Lassie.

The man Sweeney here referred to was a coachman in the employ of the same family as was Sadie, on Delaware Avenue, Buffalo.

On Friday, Oct. 31st, Nellie May Connors was invited to spend the day at the Brown house in company with Sadie, Delia and Hannah Brown. They appeared to be in the best of spirits, singing, playing and enjoying themselves greatly. Towards evening while out walking with Hannah, Sadie received a letter from the servant of a former mistress in Buffalo accusing her of stealing diamonds and other valuables. She became greatly excited, dejected, and when asked the cause of her morose condition, answered evasively:

"Oh, nothing." It appears that the jewelry was afterwards found in the house, and in all probability Sadie misplaced them while in an epileptoid condition.

On returning home the prisoner wrote the following letter to her aunt in Buffalo:

Oct. 31, 1890.

DEAR AUNTY:

when you get this I will be far from earth, I am sik and tired of living and as I told you my last hope is come at last—I am thankful to die, people rebuke me for things that I am not guilty of and as I have no one to love me, I can go in peace, as my heart I leave in Akron with the one I always spoke to you of, as he seems to not care for me. I know it is a sin to put an end to myself, but I am not the only one, my brain is longing for the end, now if I only had my little brother to take with me I would be happy. If I had died when I was young how thankful I would have been, but as it is, I must die as it is, so tell my sister that I love her as much as ever, but could not stay with her. I hope you will see to them as I know you will and when I am dead I will come to you and explain, but do not fear me I will not hurt you and the man I loved will know me as a frequent visitor. Oh dear, if it was only over how thankful I would be. I think I will take some one with me so I will close my last letter on earth, hoping God will do justice with me, as he does with everybody, so when you get this you will know that I am no more, you will find my body in the basin in Buffalo, please bury me in Akron as I will be near my loved one so good bye—from Sadie, your no more Neice.

Soon thereafter she announced the intention of visiting her friend at Fallkirk with whom she had left the purse on the night of the fair. On being asked to stop at a grocery store for butter on her way, she readily consented. When ready to start, Delia Brown asked permission to accompany Sadie, and was given consent on condition that Nellie May would go. This she readily did and the trio started on their eventful journey. On the way, Sadie dropped the letter, she had just written, in the post-office, then proceeded to the grocery store. She pushed her way to the counter, asked for a pound of butter, threw down twenty-five cents, and without waiting for the butter or change hurriedly left

the store. Her manner attracted the storekeeper's attention, but before anything could be said she was gone. She took the little girls by the hand, one on the right and one on the left, and drew them up to a high trestle belonging to the Akron Cement Works about one-half mile distant. She was seen with the girls going toward the trestle by some boys playing on the sidewalk. On the way thither she said to the girls: "There is a man in that building with a gun, and he would shoot us." Once on the trestle, some fifty-five feet high, she sat down on the edge looking into the water. Suddenly she arose, and after a struggle pushed the Connors girl off; then putting one hand over the mouth of the Brown girl and the other on her shoulder, pushed her off. It appears she then went to the house of her spiritual adviser and bade him good-bye. To the question, when and where she was going, she said excitedly, her face flushed, her eyes glassy: "You will soon find out." This was at 7.30 in the evening. She then went to the Brown house, again passing the boys at play in the street, and said to Hannah holding out her hand, "Good-bye H. If you don't want to shake hands with me, all right," and rushed out. Soon afterwards a boy came running into the house reporting that a girl had jumped over the bridge into the water. This bridge is a driveway over Murder Creek, about seven feet high and only a few rods distant from the Brown house. The father of Delia Brown sprang into the water, grasped her, and with the assistance of others, drew her out. On taking hold of her while in the water she cried out, "Oh! let me back! Oh! let me back!" She was carried into the Brown place, laid on a couch, and medical attendants summoned. The doctor gave it as his opinion that she had had an epileptic seizure. On being questioned as to the whereabouts of the children, she replied, "What children?" Afterward she mentioned "Bruce Johnson's store." She seemed much surprised to find her hair wet, and could give no account of how it had happened or where she had been.

A search was instituted, and towards morning the children were found in the ravine under the trestle. The Connors girl was picked up dead, and the Brown girl badly injured.

The prisoner was transferred on the following day to the Erie County jail to await the action of the grand jury.

Present Condition :

A few days following the homicide I received notice to examine into her mental condition, and to be prepared to sustain the defense could a possible stand be taken. On November 3d, in company with Dr. Mickle, we made the first examination. We found a frail, delicate young woman of about 18 years of age, neatly attired, quiet and unassuming in her disposition. Her features were drawn, overcast, her eyes dull and apathetic, giving her that blank feelingless expression so often met with in epileptics. She was very reticent, even when informed of the side of the case we represented. An examination showed her possessed of a rather small but well developed head, with no marked protuberances or depressions, bountifully supplied with a flowing mass of beautiful black hair. The sutures and fontanelles offered nothing abnormal ; percussion was not painful.

Her face, rather peaked, looked pale and careworn. The two sides were perfectly symmetrical, no anæsthesia, and no painful spots. The eyes were normal in their movements, pupils reacted to light and accommodation, field of vision not narrowed, and no achromatopsia. The tongue offered no deviation, neither any recent scars ; no ageusia, anosmia or acusia.

The general sensibility of the body was unimpaired ; no globus and no *points hystero-genes*. The tendon reflexes were present, not exaggerated. In short, the examination elicited nothing abnormal whatever.

In reply to questions, the prisoner denied having headaches, but has had dull, heavy sensations following upon epileptic seizures. She is troubled much with dreams, and regards them as forebodings ; when questioned as to having had any dreams before the fatal night, she replied no. The history of her former attacks is similar to that given by her relatives. The aura which she sometimes experienced was as if a large mass of logs were falling upon her.

She stoutly denied ever having taken anything from her former employers; later developments proved her innocence, although it is very probable that the jewelry was mislaid by her while in an epileptoid condition.

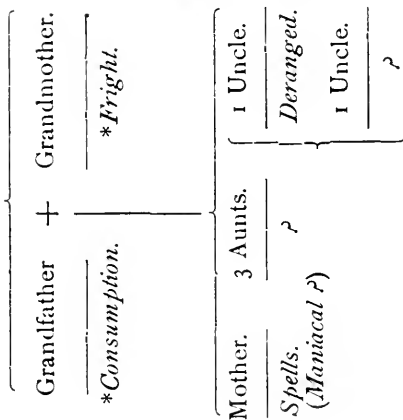
As to her relations with the Brown family, there seems to have been no intent or purpose on her part. She was fond of company and æsthetic in her dress, which, coupled with a winning way, made her a favorite in the small circle in which she moved.

Questioned as to the 31st of October, her memory serves her thus: She is cognizant of everything that happened until after receiving the letter from Buffalo accusing her of theft. She has a dim recollection of being in Bruce Johnson's grocery store, but cannot tell when or how she left. She remembers feeling of her hair while lying on the couch at the Brown's, and from that time on she is conscious. When told of the death of the Connors girl, she would not believe it, and could not conceive how she committed the act. This same statement she has made to the writer on several occasions, also to Drs. Mickle and Persons, likewise in a sworn confidential deposition made to her lawyers, Messrs. Hayes and Farrar, and we have every reason to believe that such is the truth. Her conversation, although somewhat reserved, was at all times consistent and perfectly coherent, evincing no symptom indicative of any permanent mental defect.

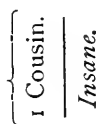
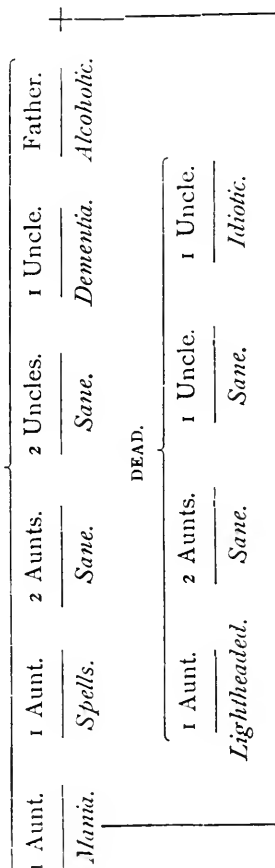
The trial before the court of Oyer and Terminer began on March 5th, 1891, and lasted three days. The theory advocated by the defense was that the crime was enacted while in an epileptoid state, and hence the prisoner is irresponsible. The plea of insanity was entered by her attorneys, and after 30 minutes deliberation, the jury handed in a verdict accordingly. She was committed by the judge to the Buffalo State Hospital, and there to remain until reported cured.

The case is a remarkable one in many particulars, and in some respects stands alone. The advocates of the transmission of hereditary vices will find here a harvest-field for investigation. The family tree is one whose

MATERNAL.
GRAND PARENTS.



LIVING.



FAMILY TREE.

branches are heavily laden with neuropathic fruit; of twenty-five members of whom we have positive knowledge, thirteen are mentally deranged.

The query, whether the intermarriage of blood relations leads to mental aberration receives in this case a most convincing answer. Her grandparents on the father's side were first cousins, their fathers having been brothers. Blessed with a family of thirteen children, the scourge of insanity descended upon six of them. Of the seven not afflicted three have died, and of the remaining four none have ever risen even to the plane of mediocrity. Their combined descendants are very few, two of whom are at the present time under the care of the State. Nature's remedy, extermination, will perhaps by the next generation have righted a wrong done against the inviolable laws of marital selection.

The early age and the manner in which the disease burst into action are matters of much concern, inasmuch as they show how often fright—under certain conditions—may become an important etiological factor.

The early treatment of epilepsy, whereby it becomes modified, is here well illustrated. According to all reports she was seized at first with the classical form of epilepsy, which under proper treatment lost much of its original character and became epileptoid. In epileptoid attacks the patient is a mere automatic machine, moving about from place to place unconscious of himself and of his surroundings. The functions of the body are all subservient to the laws which regulate them, performing their work automatically, while the mind is in a state of complete amnesia. The same holds equally true of the functions of the brain. They too are in a state of action, perhaps increased, because the power of inhibition, which is nothing more than the patient's judgment between right and wrong, is for the time being suspended.

In several cases which have come under my observation the patients have been allured while in this condition by the water, either along its banks or else in the water itself. On several occasions, Sadie on returning home was found

with her clothing drenched, while in her last attack the water seems to have enticed her victims as well as herself. A striking case was observed by the writer while attending the clinics of Professor Charcot at the Salpêtrière, Paris.⁵ The patient, a man of thirty-seven years had the first attack of 14 hours' duration, and had a dim recollection of being on the Pont St. Cloud. The second lasted 42 hours, and when he regained consciousness was bathing in the river Seine. The third attack continued 54 hours, and on recovering he was lying apparently in sleep on the banks of the Seine. The fourth lasted eight days, and in that time the patient had traveled from Paris to Brest. When he came to he was standing on a bridge looking into the water. In all of these wanderings nobody had been the wiser of his condition, and nothing in his actions or demeanor aroused the least suspicion.

The absence of all motive, the statements of the relatives of the little girls on the witness stand that Sadie had always been exceedingly kind toward them, and that a mutual good feeling existed, only strengthens the fact that epileptics wreak their vengeance generally on those nearest and dearest to them. It was a pathetic moment when the six-year-old Brown girl, forgetful of her narrow escape, and of that awful night, testified that she still liked Sadie, and that she thought Sadie liked her.

Another point worthy of note is the fact that the patient had just passed through her menstrual period, and at these particular times was wont to have some epileptic manifestations. Added to this came the letter, robbing her of one of the virtues she most cherished—that of honesty. The shock of this accusation was too severe for her weakened nerves, and it threw her into a state of epilepsy, more properly designated epileptoid. If we believe her story, she remained in this condition from the time she left the post-office, at 5 P.M., until she found herself upon the couch in the Brown dwelling at 9 P.M. She may have regained partial consciousness for a few moments while in the grocery store, or else passed into a second attack, for the only recollection

⁵ See "Léçons de Mardi," 1887-88, p. 155, and 1888-89, p. 303.

she has of these four hours is of being in the grocery store buying butter.

The letter which she wrote on returning from the post-office she declares to be a forgery, denying all claim of authorship. This letter was regarded by the people, through their attorney, as proof positive, that at the time of the act she was in full possession of her mental faculties. They declared that a letter which demonstrated the use of reasoning power and a recollection of past events could not be composed unless its author was at the time a rational and responsible being. Upon this point the doctors and lawyers seem to differ. If a man can travel from Paris to Brest and escape detection, as Charcot's patient did, it must prove that he exercised judgment and precaution in keeping out of harm's way, in supplying himself with the necessities of life, and in the proper care of his person. If this can happen in France, why not in America? The functions of the brain continue in their usual routine—automatically—while in this condition, with this point of difference, that their centers are disconnected with the center of consciousness. In scanning the two letters rather carefully, one can easily see that the condition of the writer's mind was not the same in both. The first was written in a manner cool and collected. The second, in a state meditating upon suicide and homicide, and in a spirit entirely foreign to rationality. It disclosed the loss of inhibition, or in other words the power of matter over mind. The handwriting also shows important differences; in the first letter it is distinctly legible, neat, and measured, while in the second it is hurried, irregular, and jerky, resembling somewhat the writing of multiple sclerosis.

Her whole demeanor before and after the act would not impress one with the idea that the crime was preconceived and premeditated; and yet, if we believe that the second letter was written in conscious, sane moments, we are forced to this alternative.

Considering her ancestral heritage, her former attacks, the time and manner in which the outbreak occurred, it seemed to me that the State could do itself and the prisoner more justice by caring for her mind instead of her body.

THE FUNCTION OF THE TUBER CINEREUM.

By ISAAC OTT, M D., Easton, Pa.

IN the "Therapeutic Gazette"¹ it was first stated that a thermotaxic centre existed about Schiff's crying centre.

Schiff was the first to observe that a puncture in the gray matter between the thalamus and corpus striatum caused a peculiar cry in the rabbit. In a previous number of this journal I have located this thermotaxic centre in the gray matter about the anterior end of the third ventricle. In this journal I have also stated my belief that this thermotaxic centre and the thermo-polypnœic were one and the same.² This idea was based upon the observation that a high temperature and rapid respiration ensued from the same puncture.

Lately I have tried to discover the exact seat of the polypnœic centre.

Rabbits were used, and put in a box whose temperature was about 100° F., and heated up. When their temperature was about 106°–107° F., they were removed, and the thermo-polypnœa noted. Then the skull was trephined and the cerebral cortex removed, exposing the thalami. Ether was used to a certain limit. Then punctures were made into the locality about the thalamus. It was soon found that only deep punctures arrested the polypnœa. The corpus striata could be removed and the septum lucidum scooped out, yet polypnœa persisted in undiminished intensity; but when a probe was thrust down at the very anterior edge of the thalami, then the polypnœa ceased. To determine more accurately the point at the base of the brain, I ligated in an etherized rabbit the carotids, and heated him till polypnœa was produced. Then the skull was trephined, and the anterior part of it removed down to the orbits. With a seeker, the dura being previously detached, I lifted up the

¹ September, 1887.

² See page 433.

brain and scarified the lamina cinerea with a hook-pointed knife. But no effect was seen upon the polypnœa. If I cut the optic commissure, then polypnœa was at once arrested. If I punctured the tuber cinereum just above the commissure, then the same arrest ensued. If I touched the tuber just behind the commissure, then the polypnœa ceased. Upon examining the brains where the puncture was made from above, it was found that the probe always grazed the tuber cinereum. I also noted that pressing a tuft of cotton against the optic commissure, or a slight puncture of the tuber, caused an increase of normal or polypnœic respiration. To determine if the tuber had thermotaxic functions, I punctured it in a normal animal, the carotids being previously ligated. The temperature rose to 106° F. in two hours, although the animal was bound down. Ligation of the carotids does not materially change the temperature; but fastening of the animal does. Further, the operation causes considerable shock, which lowers temperature. In spite of all these antagonistic acts, the temperature rose steadily after the puncture of the tuber. If now I heated the animal whose tuber had been punctured, then no polypnœa ensued, although the temperature reached 109° F. All these facts show that the tuber cinereum is the centre of polypnœa and thermotaxis.

These conclusions are founded upon sixteen experiments.

COCAINE ANÆSTHESIA OBTAINED BY MEANS OF CATAPHORESIS.

The "Medical News," November 15, 1890, quoting from the "Lancet," gives Dr. Arthur Harries' suggestion, that when local anæsthesia is required, cocaine hydrochlorate, administered by means of cataphoresis instead of hypodermically, should be employed. The anæsthesia is complete, and toxic symptoms do not appear. A ten-per-cent. solution of cocaine is used to saturate a flannel-padded positive electrode that corresponds in size to the desired area of anæsthesia. A large negative electrode, soaked in salt solution, is placed on some suitable surface of the body, and a current of twenty-five milliamperes is then passed for forty minutes.

L. F. B.

THE INTER-BRAIN: ITS RELATIONS TO THERMOTAXIS, POLYPNŒA, VASO-DILATION AND CONVULSIVE ACTION.

By ISAAC OTT, M.D., Easton, Pa.

THE floor of the inter-brain consists of a mass of gray matter which is prolonged in a funnel-shaped manner toward the base of the skull, constituting the tuber cinereum whose lumen, the infundibulum, is a continuation of the third or middle ventricle.

It has always been to me a matter of surprise that no experimentalist has been able to obtain a temperature of 109.5° F. in puncturing the thalamus. Girard¹ found that punctures into the thalami were followed by an elevation of temperature. In Mosso's² experiments an elevation of one to two degrees was seen, which quickly returned to normal. Dr. White, in his first paper³ found an average rise of $2\frac{1}{2}^{\circ}$ F. In his second paper⁴ he states that in thalamic injuries the temperature never rose 2° F., the average rise being $\frac{9}{10}^{\circ}$ F., the highest being 1.7° F. Since the discovery that the tuber cinereum was a thermotaxic centre, I have made another series of experiments. It was found that the puncture at the anterior end of the thalami must enter the tuber cinereum to cause a rise of temperature. Several (fourteen) experiments were made upon etherized rabbits and cats, and in no case was there any marked rise unless the tuber was injured. When the skull was trephined and a very fine probe thrust through the cortex down to the base of the thalami, then the rise of temperature was 2.7° F.: or if in an etherized rabbit the carotids are clamped temporarily and the skull removed so as to lift the whole anterior part of the brain in an upward direction to expose the optic commis-

¹ Archiv. de Physiologie No. 4, 1888.

² Giornale della R. Accademia di Medicina di Torino, 1889.

³ Foster's Journal of Physiology, vol. xi. Nos. 1 and 2, 1890.

⁴ British Medical Journal, March, 1891.

sure, then a puncture into the tuber, causes a rise of 2.2° F. If I am fortunate to puncture on the median line of the tuber in the rabbit so as to injure the bilateral gray, then a temperature of $109\frac{1}{2}^{\circ}$ F. is obtained in a few hours.

In the paper upon vaso-tonic centres in the thalami I located them at their anterior part. Lately I have tried to more accurately determine the position of these centres. In the rabbit etherized I temporarily clamped the carotids, then removed the skull and lifted up the anterior half of the brain, so as to expose the tuber cinereum. Then the clamps were removed from the carotids, and one of them attached to the kymographion. After a registration of pulse and pressure ensued, I punctured the tuber with a fine probe, when a gradual fall of arterial tension ensued amounting in about forty minutes to about one-fourth the absolute pressure.

This fall invariably ensued in six experiments. These observations left no doubt in my mind that vaso-tonic centres existed in the thalami, or at least centres concerned in some manner in vaso-dilation. It is possible that this centre is a vaso-dilator, but it seems to me more probably vaso-tonic.

In some experiments⁵ made upon the unpigmented feet of cats, it was found that centres located in the spinal cord were concerned in the vaso-dilation. If the sciatic was divided, then the corresponding foot did not become more vascular. When an animal is subjected to extreme heat, then heat impulses from the peripheral nerves excite the polypnœic centre, which sends excitations to the respiratory centre and causes rapid respiration, and a dissipation of heat through the moisture thrown off by the lungs.

In the same manner heat impulse arrives at the vaso-tonic centres, and causes them to relax their tonus over the capillaries, thus permitting them to dilate. Hence more blood is on the surface of the body and more heat dissipated from it. The arterial tension,⁶ however, does not fall, although the vessels dilate because heat accelerates the heart, which pours more blood in a given time into the capillaries. Towards death the blood-pressure falls from heat. The

⁵ Journal of Physiology, vol. ii. No. 2.

⁶ Vincent, Recherches experimentales sur l'Hyperthermie, 1887.

thermotaxic centre in the tuber acts as a thermolytic centre through the respiratory and vaso-motor apparatuses. It may be difficult to understand how a centre concerned in the dissipation of heat could cause a rise of temperature upon puncture, but it must be remembered that increased dissipation is followed by increased production, and if the proportion is not the same, that is—heat dissipation and heat production—are not the same in equal periods of time, then the temperature will rise.

These facts cause a revision of the functions of the thermotaxic centres.

Fore Brain { Cortex-Thermo-inhibitory centres, (1) cruciate, (2) Sylvian.
Base-Thermogenic centres, (1) caudate nucleus; (2) gray matter of septum lucidum (White); (3) gray matter in front of and beneath caudate nucleus.

Inter-Brain { (4) Thermolytic centres, Polypnoëic and vaso-tonic centres in tuber cinereum.

After brain—Thermolytic centres—respiratory and vaso-motor.

Spinal Cord { Thermolytic centres.—Sudorific centres.—Thermogenic centres.

Puncture like fever poison excites the thermotaxic centres. Antipyretics act as sedatives to them, and reduce their excitability.

It was also noted that punctures into the tuber cinereum gave rise, occasionally, to convulsive movements. These spasms were of a clonic nature, and occurred about four times a minute.

Appended are a few of the twenty experiments.

EXPERIMENT I.—CAT,

Trephined and probe thrust through the opening.

A.M.	Temperature.
10.33.....	101.3
10.36.—Puncture into posterior edge of tuber cinereum between the crura.	
10.48.....	101.9
11.33.....	103.2
P.M.	
2.05.....	104.2

EXPERIMENT II.—RABBIT.

A.M.	Temperature.
9.20.....	103 ³ / ₅
9.21.—Probe thrust through trephined opening in skull injuring the tuber cinereum and anterior edge of thalami.	
9.50.....	103 ³ / ₅
10.50.....	103 ² / ₅
11.40.....	105.8
12.35.....	105.4

EXPERIMENT III.—RABBIT.

P.M.	Pulse.	Pressure.
3.35.....	50	90
3.35.15.—Brain elevated and tuber cinereum punctured.		
3.35.30.....	54	68
3.36.....	54	68
3.37.....	52	66
3.50.....	52	58
4.12.....	53	56
4.46.....	57	50

EXPERIMENT IV.—RABBIT.

P.M.	Pulse.	Pressure.
5.25.....	67	110
5.25.15.—Brain elevated and tuber cinereum punctured.		
5.26.....	67	114
5.27.....	67	108
5.35.....	68	98
5.40.....	65	68
5.46.....	71	72
6.25.....	77	84

EXPERIMENT V.—RABBIT.

P.M.	Pulse.	Pressure.
5.29.....	70	104
5.29.15.—Brain elevated and tuber cinereum punctured.		
5.30.....	72	86
5.41.....	72	76
5.42.....	75	72
5.45.....	70	80
5.56.....	76	84
6.10.....	73	70

EXPERIMENT IV.—RABBIT.

P.M.	Pulse.	Pressure.
4.09.....	68	108
4.10.—Brain elevated and tuber cinereum punctured.		
4.11.....	65	94
4.12.....	68	86
4.13.....	66	72
4.15.....	70	84
4.20.....	70	92
6.08.....	79	82

EXTREME LOSS OF MUSCLE SENSE IN A PHTHISICAL PATIENT.

By C. EUGENE RIGGS, A.M., M.D.,

St. Paul, Minn.

MAGGIE S., aged 10 years, American, an inmate of St. Joseph's Orphan Asylum, came to the University Dispensary, December 12, 1889, for treatment. Her parents both died young of phthisis; patient has never been a strong child, and was reported to have passed through several attacks of lung fever. In March of 1889—nine months previous to the time I first saw her—she was suddenly taken ill with persistent and uncontrollable vomiting; this continued for nearly a week, during which time she became very much exhausted, so that her life was despaired of. There was no sore throat nor any evidence whatever of the presence of diphtheria. It was noticed that when she attempted to stand or walk, she would immediately fall to the floor. This was supposed to be due to the extreme weakness following the persistent vomiting; but when the latter ceased and her appetite returned, the inability to stand still remained, and for several weeks she had to be carried, being absolutely unable to either stand or walk. From that time until the occasion of her first visit to the Dispensary she gradually improved until, with the aid of a companion to steady her movements, she was able to get about, but would fall the moment she was left to herself. Careful physical examination showed a poor nutritive state, unhealthy condition of the skin, flabby muscles and evidences of an irritable condition of the alimentary tract, but no signs whatever of any organic disease of heart, lungs or kidneys. Sensation was perfect in all parts of the body, and the reflexes were normal. There was no loss of power in the upper extremities, but in the lower there was slight diminution of muscular strength; tests of both the flexor and

extensor muscles showed that this diminution in strength was no more than could be entirely accounted for by her poor nutritive condition.

The distinctive feature of the case was the extreme incoördination observed in the lower extremities, chiefly in the muscles of the feet, producing great unsteadiness of gait; when the feet were uncovered, the irregular action of their muscles in standing, or when there were no movements of the feet, was most noticeable. "It is important," says Gowers, "to be aware that the incoördination may not be equally distributed through the legs. In some patients it is marked in the muscles of the hips and knees; . . . in other cases this incoördination affects chiefly the muscles of the feet." This furnishes a ready explanation for the presence of the knee-jerk in this patient.

The treatment employed was electricity, with tonics and reconstructives. Before the close of February there had been some improvement in her general condition, but there was practically none in her ability to stand or walk.

May 1, 1890.—Treatment was still continued as above, with much the same result. The power to control movement of the lower extremities has been regained to the extent that the patient can walk across a small room with difficulty, frequently falling forward or sidewise, but usually catching herself before reaching the ground. Commenced to-day the use of suspension, the time of each suspension being from forty to eighty seconds, alternating with electricity.

July 1st.—The patient's improvement has been very rapid during the past two months. She is now able to walk short distances without aid, but trips easily, especially in going up or down stairs. Have ceased the electricity, but still continue the suspensions.

August 1st.—Patient has improved rapidly during the past month; gets about entirely by herself, runs up and down stairs, and only an occasional hitch in gait is perceptible.

Shortly after this time the patient passed from under my

observation; but I am informed that within less than a year she developed phthisis, and is now dead.

The improvement in this case accompanying the use of suspension was, I am assured, simply a coincidence.

The relation between phthisis and multiple neuritis is well established. "There are," says Dr. M. Allan Starr, "cases due to infectious agents, of which those producing diphtheria, variola, typhus, typhoid, malaria and tuberculosis have been hitherto recognized. In course of all these diseases, or as a sequel to them, multiple neuritis may develop, and its occurrence is too frequent to be accidental."¹

At this same time I had referred to me another patient in whom there was a loss of power in the right forearm and hand, especially marked in those muscles which are supplied by the musculo-spiral nerve; there were no disturbances of sensation. This person manifested all the symptoms of a rapid form of phthisis; there was the hectic flush, emaciation, fever, cough, etc. She died within a few months without having regained the use of the paralyzed muscles.

¹ Familiar Forms of Nervous Disease, p. 209.

POST-SURGICAL DELIRIUM.

The "*Médecine Moderne*" of January 22, 1891, contains a paper by Professor Le Dentu upon this subject. Dupuytren earlier described nervous delirium following surgical operations, was violently opposed by Broca, and by Festal and Verneuil, who consider this condition and delirium tremens identical. But nervous delirium and delirium tremens are distinctly two. Post-surgical insanity may assume the form of mania or melancholia, which is also true of alcoholic insanity. Five cases of acute mania, post-surgical, are cited. The attack came and went suddenly, lasted from a fortnight to two months or more, and left the patients in full possession of all their mental faculties. The five cases of melancholia of sudden appearance following surgical operations resulted in two deaths, one improvement and two perfect cures.

L. F. B.

SULFONAL IN AFFECTIONS OF THE NERVOUS SYSTEM.

By GRÆME M. HAMMOND, M.D.

SULFONAL is one of the most serviceable drugs in the treatment of nervous diseases which modern chemical research has added to the pharmacopœia. It cannot, in any sense, be considered as a remedy which, by its persistent administration, causes the resolution of pathological conditions. It is a hypnotic, pure and simple. On account of its tastelessness, the refreshing, apparently natural, sleep which follows its administration, and the freedom from unpleasant after-effects, I regard it as a remedy of the highest order. Though I have frequently prescribed sulfonal in large doses nightly, I have never observed any tendency on the part of the patient to form a sulfonal habit.

Of course, being a hypnotic, its use is confined principally to those affections in which insomnia constitutes an important feature. I do not believe that sulfonal ever cures insomnia, except in rare instances. Where wakefulness, moderate in degree and in duration, has been induced by anxiety or worry, and still persists after the exciting cause has been removed, I have sometimes found that fifteen or twenty grains of sulfonal, given every evening for four or five consecutive days, entirely dissipates the insomnia without any other remedial measures being adopted. But it is also serviceable in the preliminary treatment of persistent insomnia. The remedies which relieve insomnia, by the arrest and removal of those morbid conditions which have developed the cerebral hyper-excitability, necessarily act slowly. Under the most favorable conditions, two or three days at least elapse before wakefulness gradually yields to sleep. In such cases a sufficient dose of sulfonal, given for two or three consecutive nights, insures that much-needed

sleep which will be continued without the sulfonal when the effect of the remedies aimed at the morbid condition inducing the insomnia becomes manifest.

In certain forms of insanity, in which the constant mental activity frequently induces nights of wakefulness, sulfonal can be used with benefit. It is far preferable to narcotics, as it secures the desired rest without any apparent pernicious after-effect.

The dose of sulfonal varies greatly for different individuals, depending principally upon the degree of insomnia and the condition of mental excitability. In mild cases, fifteen or twenty grains will be enough, but I have seen several cases in which fifty or sixty grains at a dose were required before even a moderate amount of sleep could be obtained. These cases were all sufferers from insomnia depending upon cerebral irritation of undoubted organic origin, such as epilepsy, cerebral tumors, etc.

There are certain individuals who undoubtedly evince a decided intoleration for sulfonal.

In one case, that of a woman, fifty years of age, who was suffering from insomnia coincident with cerebral embolism, the administration of fifteen grains of sulfonal was almost immediately followed by vertigo, stupor and marked delirium, which persisted for several hours. A few days later the same symptoms followed almost immediately after the same quantity of sulfonal was taken. As a usual thing the effects of sulfonal rarely show themselves until three or four hours after the drug is taken. It could not have been the age of the patient which caused the unpleasant symptoms, for I have frequently given doses of fifty or sixty grains to persons of sixty or seventy years of age. One case—a man, sixty-five years of age, who suffered from frequent epileptic attacks—took sixty grains of sulfonal nightly for a month without any unpleasant symptoms whatever. Another patient, after taking twenty grains of sulfonal, complained of similar symptoms to those previously mentioned, besides which the patient felt weak and suffered from vertigo for the following twenty-four hours. These

are the only two instances I have met with in which any decided intolerance for the drug has been shown.

To obtain the best effects of sulfonal, it should be given as nearly in solution as possible. Hot water or hot milk are, in my opinion, preferable as vehicles for the solution or suspension of the drug. Sulfonal is readily soluble in alcohol, and it is often recommended, therefore, to give it dissolved in wine or in some other fluid containing alcohol. But alcohol, being a cerebral stimulant, is contraindicated in most cases of insomnia. It may be given dissolved in soup, in tea or in coffee, and will be tasteless, unless the dissolving fluid contains grease, as soups frequently do, when a decidedly bitter taste will at once be remarked.

Sulfonal given in powders has in my experience proved more efficacious and efficient than when administered in the form of compressed tablets. Whether it is that the latter, being more insoluble than the former, pass into the lower portion of the alimentary tract before they become completely absorbed, I do not know; but I have frequently observed that when equal quantities of sulfonal, in tablets and in powders, have been taken by the same individual, that the duration of sleep produced by the powders greatly exceeded that induced by the tablets.

The cases in which sulfonal gives rise to unpleasant symptoms are so infrequent—only two such instances having come under my observation—that we may readily regard it as a safe and valuable hypnotic—not as a remedy which will cure insomnia, but as a temporary means of bringing refreshing sleep to an exhausted or over-excited brain.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

*From the Swedish, Danish, Norwegian
and Finnish:*

FREDERICK PETERSON, M.D., New
York.

From the German:

WILLIAM M. LESZYNSKY, M.D., New
York.

BELLE MACDONALD, M.D., New York.

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:

JOHN WINTERS BRANNAN, M.D., New
York.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo,
N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport,
Mass.

*From the German, Italian, French and
Russian:*

F. H. PRITCHARD, M.D.

ALBERT PICK, M.D., Paris, France.

From the English and American:

A. FREEMAN, M.D., New York.

From the French and German:

W. F. ROBINSON, M.D., Albany.

PATHOLOGICAL.

THE CARE OF THE CHRONIC INSANE.

In viewing the advantages of the Belgian colony of the insane at Gheel, the question arises, Why should the chronic insane of our country be housed and cared for at a *per capita* cost infinitely in excess of what they have been accustomed to all their lives, and whether, with simpler, plainer homes, familiar occupations and larger freedom, this class would not only be happier, but better off in every way, as well as less expense to the State? Why should the legitimate work of a hospital be hampered, as it undoubtedly is, by the vast accumulation of chronic cases whose care involves an immense amount of work that is non-professional? Cannot these cases be just as well cared for in asylums built at less expense, or placed in homes whenever feasible, rather than be permitted to encumber the wards and hinder the work of a hospital in which recent cases demand, and should have, every care and all the skill science has at its command? Might there not be greater probabilities in the way of recoveries if this were true?

I simply question, for I know how the life of every hospital physician is burdened with petty details, and how

difficult it is under such circumstances to attain to the highest professional ability. For many years the plan for the care of the insane which has recommended itself to me has been that of a hospital to which patients should be committed, and from which they should be drafted, after their condition is determined, into simple, plain, inexpensive cottages or homes, such as the State could best furnish, there to be cared for well and kindly under medical as well as State supervision, but at a minimum cost as regards their housing, while in the hospital should be kept those who needed the best of skilled medical care and trained attendance. From this hospital, in all cases where such a course would be advisable, transfer should be made to a convalescent home, and so into the world again.

The mammoth asylums, to which year after year wings are added until no man can have an adequate conception of the needs of his patients, and especially no idea of their pathological condition, are a blot on the intelligence of the age.—*Margaret A. Cleaves, M.D., in the "Journal of Mental Science," April, 1891.*

L. F. B.

CLINICAL.

ADDISON'S DISEASE.

A peculiar case is reported in the "Journal," Sept. 13, 1890, by H. Ohmann-Dumesnil. The patient, forty-five years old, when employed in a grain elevator, began to experience a general malaise, and noticed the faintest bronzing of the skin. This increased steadily. In about two months the body was covered with profuse perspiration of an intense and disgusting odor. Doors and windows had to be opened, and the whole house was permeated by the odor, which resembled that of carrion. The bromidrosis gradually disappeared, and the secretion lessened in quantity. The family history good. At the time of examination the body was well developed, perhaps slightly emaciated, and the expression of the face dull. There was at times sudden tympanitis, which made it impossible to get on his clothing. Pressure over the region of the kidneys and supra-renal capsules did not elicit pain. The man had a good supply of dark brown hair, almost black. His family stated that it had been light before his illness. The skin appeared normal, except in color. With the exception of that covering the head and hands, the integument was of a marked brownish bronze color, the chest being somewhat darker than the back; and disseminated through-

out the affected area were darker macules of various sizes. The areolæ about the nipples, the axillæ, perineum and internatal field were also darker than the general surface, while the skin lying over the scapulæ was lighter. White macules, the size and shape of small oats, existed over the chest and back. The patient thought these were scars from little wounds made by grain, but close inspection failed to furnish any satisfactory evidence of there being scars. Crocker states that the study of Addison's disease has made it highly probable that whenever the abdominal sympathetic, especially the solar plexus, is irritated, general pigmentation is likely to ensue. Greenhow and McCall Anderson do not look upon the symptoms as dependent upon destruction of the supra-renal capsules, but upon extension of the morbid process to the neighboring parts, especially to the solar plexus and semi-lunar ganglia.

L. F. B.

HYPOCHONDRIA AND HYSTERIA IN MEN AND WOMEN.

The "Cincinnati Lancet-Clinic," Nov. 23, 1889, gives an abstract from the "British Medical Journal" upon this subject. Paget and others affirm that hypochondria is more frequent in men than women; and such statements have, in a roundabout way, led to the impression that hysteria is a form of nervous disease peculiar to women, while hypochondria is a condition found generally among men. Confusion always arises when the terms hysteria, hypochondria and neurasthenia are used indiscriminately. True hysteria in man is frequent, not alone in over-civilized countries, but among nations like the Circassians and Persians. In a recent issue of the "Deutsche med. Wochenschrift," Dr. Mendel writes of "Hypochondria in the Female Sex," presenting striking differences from hysteria. The author gives three forms of hypochondria in women. The first is characterized by great fear of death, or of some disease to which the patient is not subject, without moral or physical timidity in any other respect. This form is rare among women, though common in men. In the second type, the patient believes that some particular organ is already diseased, and really feels pain in the affected or suspected part. This condition is frequent in hypochondriacal women. The third form is like the second, with the important addition of disorders of special sense and common sensation—a state that prevails among women

more frequently than among men. Dr. Mendel makes the following interesting distinctions between hysteria and hypochondria: As a rule, hysteria begins about puberty; hypochondria, later in life. Hysterical symptoms are *clavus*, *globus hystericus*, localized anæsthesia, paralysis; these are not observed in hypochondria. The troubles of the hypochondriacal are stereotyped; in hysteria the patient fancies herself from time to time subject to a new disease or new symptoms. The local symptoms, whatever they may be, are ably counterfeited in hysteria; in hypochondria, the facial expression of suffering is best indicated, the face often being deep-lined, as though racked with pain and eaten up by care. Hypochondria diminishes during pregnancy, and increases after child-birth. It is not a disease of childhood. Recent researches (Burkardt and Duboisin) in another direction prove that hysterical babies are not uncommon. There are few instances of ultimate cure among hysterical infants, the majority remaining anæmic, with various bodily symptoms or hysterical psychoses. Functional nervous disorder is not confined to any particular estate, but exists among the just and the unjust, among men and women, and hapless infancy as well. Its early recognition and proper designation are of great importance in treatment. Words have much to answer for in the rash (not rational) treatment of nervous phenomena. Good definitions are everywhere in order in medical science, and nowhere more needed than in neurology. To realize fully and thoroughly that hypochondria, hysteria and neurasthenia are three, is to possess the mental calibre essential to the fair consideration of these troublesome conditions.

L. F. B.

SYPHILITIC PSEUDO-PARALYSIS.

The "Concours Médical," March 28, 1891, notes some cases of so-called "Parrot's disease," followed by complete cure. In a child six weeks old, who from birth had had intense coryza, there was complete paralysis of the right arm. The mother, twenty-nine years old, denied any previous illness whatever, and considered herself perfectly well in spite of nine miscarriages, her only living child, except the paralyzed baby, being the offspring of an earlier marriage. Daily mercurial inunctions and mercurial baths brought about a cure in two weeks. The radial hyperostosis disappeared, the coryza improved, and movements were again possible.

Parrot, in giving always a fatal prognosis, rather exaggerated the dangers of this condition. No doubt he saw his cases at some late stage. There are numerous cures, Fournier reporting several.

Parrot's disease may be confounded with fracture of the radius, with osteomyelitis, epiphyseal separation and anterior-polio-myelitis, and sometimes it is difficult to distinguish its true nature. Treatment must be continued for some time, and consists primarily in the strictest hygiene. Remedies to be used are mercurial baths and inunctions, Van Swieten's liquid and Gibert's syrup. L. F. B.

ACROMEGALIA.

In the "*Gazette Hebdomadaire de Médecine et de Chirurgie*," February 21, 1891, there is mention of Dr. Hugo Holste's case of acromegalia. Following an infectious disease in a subject forty-one years old, pain in the extremities and the classic symptoms of this rare condition appeared. This patient dying of erysipelas, an autopsy revealed a large and softened pituitary body that histologically showed no changes beyond increase in connective tissue. As the nine recorded autopsies in acromegaliac subjects give very different results, it is a little difficult as yet to pronounce upon the pathogenesis of this curious disorder. Broca's anatomical researches give definite evidence that the osteal lesions in acromegalia and those of Paget's disease are distinctly two.

The same journal, February 11th, gives the history of a woman, twenty-five years of age, in whom headache, ringing in the ears and pains in the fingers appeared after a great fright. Later the hands and feet increased in size without deformity, there was suppression of the menses, mental depression and an enlargement of the head, together with the characteristic change in its shape; the nose widened and the lips grew thick, especially the upper one; the tongue, ears, nails and thymus remained normal; the thyroid was small; there was hyperidrosis; electrical reactions, reflexes and sensibility were normal. L. F. B.

A CASE OF SYRINGOMYELIA COMMENCING AS A HÆMATOMYELIA.

Dr. Robinson reports in the "*Journal de Médecine de Paris*," February 22d, 1891, the following unusual case: A shoemaker, thirty-three years of age, a native of Asia Minor, presented himself for treatment at the Armenian

dispensary in September, 1890. His family and early personal history were unimportant. In September, 1889, while riding, he was thrown violently from his horse, striking the ground upon his back, in the region of the lower cervical vertebræ. He did not lose consciousness, but was unable to rise, his left leg being completely paralyzed. He also felt a tremendous pressure upon his abdomen, and a constriction about his waist so strong, that it seemed as if a belt were cutting him in two. At the end of half an hour, he found that both his hands were paralyzed, and he began to suffer great pain, along the course of both ulnar nerves. He had retention of urine, and passed his fæces involuntarily and unconsciously the following night. During the next three months he gradually gained power in all his limbs. He was able to walk with the aid of a cane, dragging the left leg. The muscles of the two upper extremities, especially of the hands, were much wasted. He improved steadily in the use of his right hand, but the fingers of the left hand were contracted into the *main en grippe*. At this time he had retention of urine and of fæces.

On examination of the patient, Dr. Robinson found, in addition to the above motor disturbances, the dissociation of sensations characteristic of syringomyelia. Sensibility to touch, was everywhere preserved. Sensibility to pain and to temperature changes was lost on the right side from the groin to the foot. On the left leg, and in both arms, all the varieties of sensibility were normal. The electrical reaction was much diminished in the atrophied muscles of the left forearm and hand. The special senses were unaffected; the visual field was not contracted.

The patellar reflex was normal on the left side, exaggerated on the right.

The author thinks that there can be no doubt as to the diagnosis of syringomyelia in this case; but he considers it profitable to inquire what rôle the traumatism played in the genesis of the disease. Trauma has often been suggested as a primitive cause of syringomyelia, but some observers have justly argued that the trauma is frequently the result of the analgesia, of which the majority of patients remain in ignorance for a long time.

There is no doubt, however, that in some cases the traumatism is the cause and not the effect of the malady. The case just described is evidently one of this kind. Minor, of Moscow, offered an explanation of these cases at the last International Medical Congress—an explanation which Dr. Robinson accepts as entirely logical and satisfactory. Ac-

according to Minor, the rapid development of the symptoms after the initial trauma, and their equally rapid retrogression, are in favor of the hypothesis of an effusion of blood into the spinal cord. This hypothesis is also supported by the findings on autopsy. The author, therefore, believes himself justified in supposing that in his cases there was a hemorrhage in the neighborhood of the central medullary canal, or of the anterior or posterior horns, such hemorrhage leading in time to the formation of a central glioma.

J. W. B.

DISSOCIATION OF THE THERMIC SENSIBILITY IN A CASE OF SYRINGOMYELIA; AUTOPSY.

F. Déjerme and A. Thuilant publish (*Médecine Moderne*, February 5th, 1891—*Lo Sperimentale*, March 15th, 1891,) the clinical report of a case in which the diagnosis of syringomyelia was confirmed by the autopsy. The case presents very unusual features, and is of importance clinically and physiologically. The tactile sense and the sensibility to pain were unimpaired, nor was sensibility to cold affected. On the other hand, sensibility to heat was lost over a very large area.

It is this phenomenon of the dissociation of the sensibilities to heat and to cold which gives value to the case, and it was on this symptom that the authors principally based their diagnoses of syringomyelia.

J. W. B.

NEURASTHENIA IN ITS RELATIONS TO THE ALTERATIONS OF THE DIGESTIVE TRACT.

Dr. Champagnac has recently published an important monograph on the above subject. The following are his conclusions, according to the "*Gazzetta degli Ospitali*," March 29th, 1891.

1. The conjunction of gastrectasia, of prolapse of the right kidney, and of neurasthenic symptoms is absolutely incontestable.

2. It is possible, by judicious treatment of the dilatation of the stomach, to cure the nervous symptoms which accompany and follow it.

3. This treatment does not cause the dilatation to disappear, but arrests the phenomena of auto-intoxication, the point of departure of the neurasthenic disturbances.

4. Although the gastrectasia does not disappear, the patient ceases to be a nervous invalid.

5. In the pathogenesis of the neurasthenic symptoms, the author does not accept the theory of Glenard (enteroptosis), preferring rather that of Bouchard (the pathogenetic importance of the gastric dilatation).

6. He finds the nervous theory (Beard) insufficient, and incapable of explaining the neurasthenic phenomena when these have been preceded by the dyspeptic symptoms.

NERVOUS APHONIA OF FOUR WEEKS' DURATION, CURED BY SUGGESTION DURING HYPNOTIC SLEEP.

Emile Müller (*Gaz. méd. de Strasburg—Gaz. hebdom. des Sciences Médicales*, April 4th, 1891) relates the following case: Miss R., thirty years of age, was sent to him by her physician to be treated for aphonia, from which she had been suffering for four weeks without interruption. She had had three previous attacks, none of which had lasted for more than a week. Expectorants, inhalations, the continuous current, all had been employed without effect.

Laryngoscopic examination was negative. Dr. Müller tried faradization without result. He then concluded to employ hypnotism. He succeeded in hypnotizing her without difficulty, promising her that he could probably restore her voice, if she allowed herself to go to sleep.

While she was in deep sleep, he suggested to her that her voice had returned. He then asked her her name, and she replied in a clear, strong voice. She also answered other questions put to her. Dr. Müller finally raised her from the hypnotic sleep, and she, wishing to apologize for having gone to sleep, perceived that she was speaking in her natural voice. She remained under observation for about a fortnight, and had no further aphonia during that time.

J. W. B.

THE ÆTIOLOGY AND TREATMENT OF CHOREA.

Dr. Groedel, of Wanheim, read a paper (*Internationale klinische Rundschau*, April 19th, 1891) on this subject at the recent Congress of Balneology at Berlin. He first made a brief reference to the various prevailing views as to the ætiology of chorea, with especial reference to its relation to rheumatism and diseases of the heart. He stated that the occurrence of these affections and chorea in the same individual was undoubtedly very frequent. The real connection between them was, however, not yet clear. Probably

rheumatic diseases (and most cardiac affections are to be classed as rheumatic) furnish an especial exciting cause for the development of chorea, as well as psychical disturbances and anæmia.

As to treatment, only two of the many remedies suggested are worthy of serious consideration, namely, arsenic and antipyrine. In case of anæmia, iron is also indicated.

The medicinal treatment can be materially aided by systematic gymnastic exercise. The patient should make active movements, watching them carefully himself. In this way they can often be carried out without any choreic jerkings whatever. Fatigue is to be carefully avoided, hence the exercise must be of short duration, and repeated frequently during the day. Dr. Groedel is opposed to sending patients to any water-cure during the acute stage of the illness. Gentle cold-water treatment, or tepid baths, may be used at home with advantage. When the patients are convalescing they may be sent to the seashore, or to some iron spring, in order to improve the general health, and to prevent relapse.

J. W. B.

INFANTILE HYSTERIA OF CONVULSIVE NATURE.

Paul Sollier reports in "*La France Médicale*," No. 1, 1891, the following case: The patient was a little girl, five years old, of neuropathic hereditary tendencies. The affection came on after the child had been greatly excited, the first manifestation being a trembling of the whole body, which lasted more than an hour. The next day there was general icterus. The sleep became agitated, troubled by night terrors. Four months later she had her first convulsive attack; then the attacks became more frequent, and of longer duration. The child always felt them coming on. She had the sensation of a ball starting from the right side of the abdomen and travelling upward to the throat. She then uttered a sharp cry, contorted her legs and arms and neck, from time to time, and fell to the ground completely relaxed. Some times there was opisthotonos. She had no clonic movements, nor "attitudes passionelles." She never bit her tongue nor passed urine involuntarily. Sensibility to touch and to pain were lessened over the entire body, but were markedly on the left side. There was slight anæsthesia of the pharynx. The reflexes at the knee were exaggerated. The plantar reflex was almost abolished, especially on the left side.

The child's condition improved rapidly, as soon as she was removed from her parents. J. W. B.

COMPRESSION OF THE CAUDA EQUINA.

As surgery of the brain, cord and peripheral nerves has received so much attention within the past year, a contribution to operations on the cauda equina is not without interest.

Dr. Leopold Laquer (*Neurologische Centralblatt*, April 1st) gives a detailed history of a case which came under his care in September, 1888. At that time the patient complained much of a severe pain in the sacrum, and an uncomfortable feeling when sitting or lying. Notwithstanding persistent treatment, the condition steadily grew worse. In December, 1889, when the patient again returned to the author there was considerable alteration in motion and sensation, as well as some atrophy of the lower extremities, with increased severity of pain in the the sacrum. In September, 1890, in addition to the foregoing symptoms, there was constipation with severe pain during a movement and on micturition. On the right side the patellar reflex was abolished, and on the left it was weak. The position of the body was that of extreme kyphosis. Locomotion was slowly and cautiously performed, so as to prevent any movement in the spine, which if attempt was made to straighten it, would increase the almost unbearable pain. There was no ataxia. Sensation was abolished in the scrotum and perineum, as well as in the lower extremities. There was some atrophy of the quadriceps of both sides, but no trophic changes. With the excruciating pain, loss of sleep and appetite, the necessity for relief of some kind was very obvious. The symptoms taken collectively led the author to the diagnosis of compression of the cauda from some unknown cause, followed by degenerative neuritis.

An operation was decided upon. Dr. Louis Rehn performed the operation of laying open the entire sacral canal, disclosing a small extra-dural tumor in the middle of its lumen. Compression of the dura and cauda, was almost complete. Examination of the growth proved it to be a lymphangioma cavernosum. Recovery was prompt. By the end of the second week after the operation the patient was free from pain and sleep was natural. In January of this year the sacral canal was almost entirely closed; the general condition was very much improved he could stand

or sit for three or four hours at a time without much weariness. The bladder and rectum had almost recovered their normal condition. The reflexes were still diminished, but both were now equal. The kyphosis had nearly disappeared.

B. M.

ON THE SURGICAL TREATMENT OF BASEDOW'S DISEASE.

Dr. F. Lemke, of Hamburg, in the "*Deutsche medicinische Wochenschrift*," 1891, No. 2, describes two cases of Basedow's disease, namely, in a seventeen-year-old and a forty-seven-year-old patient respectively, where extirpation of one-half of the goitre was performed, with subsequent retrogression of the remaining portion of the gland and disappearance of the exophthalmos and the palpitation. Seven months after the operation, the first patient was completely cured, and the second so much improved as to be capable of following his occupation.

On account of the dangerlessness of extirpation of one-half of the goitre in youthful and robust individuals, especially in the beginning of the disease, the writer favors surgical interference.

P. and P.

THERAPEUTICAL.

TREATMENT OF COLLAPSE AFTER ACUTE MANIA.

Dr. A. Mercklin (*Centralblatt für Nervenheilkunde und Psychiatrie*) reports what he considers a very important addition to the therapeutics of psychiatry. The cases to which the remedy is applicable are those of acute psychoses where all the known measures have failed to relieve the maniacal symptoms, and where the patients finally sink into collapse from inanition. The case upon which the author employed his method was one of acute mania, and had been under treatment, in the usual way for about two weeks when symptoms of collapse came on, death being imminent.

Subcutaneous infusions of warm salt solutions were at once given. The nose, mouth and lips were also frequently moistened with the solution. In a few hours there was decided improvement in the patient's condition, followed in

a short time by lucid intervals, she inquiring in a perfectly rational manner as to her surroundings and asking for food.

From this time on the recovery was uninterrupted, there only remaining at the time that she passed from observation, some slight hallucinations and sensory disturbances.

B. M.

APOPLECTIFORM NEURITIS.

In the *Centralblatt für klinische Medizin*, No. 18, is found the report of an autopsy made in a case of this disease by M. J. Déjerine. When the patient first came under observation there was complete paralysis of the right arm, considerable disturbance of sensation, transient loss of muscular sense, with some atrophy and spontaneous pain. A year later the muscle strength was very feeble, with atrophy of the whole arm, but particularly of the thenar, hypothenar and the interossei groups. The hand presented the appearance of a claw, and was cyanosed. The patient died, twenty-three months after the onset of the neuritis of tuberculosis. Sections of the nerves disclosed numerous hæmorrhages in and around the brachial plexus, with considerable thickening and ossification of the connective tissue. The vessels and nerves of the whole axillary region were completely matted together. The skin, muscle and nerves were more or less involved, some parts showing slight regenerative processes. The spinal cord at the root of the nerves was intact.

B. M.

FALLACIES IN THERAPEUTICS OF EPILEPSY.

The "University Medical Magazine" for December, 1890, has a paper by Dr. Theodore Diller on drugs in epilepsy and the hasty conclusions that are sometimes reached by practitioners in regard to their use. Hughlings-Jackson foresaw, from clinical observation alone, many of the facts of cerebral physiology afterward verified in the experiments of Ferrier. This Ferrier acknowledges. From them both the most salutary lessons in patient observation and earnest research may be learned. Seguin has recently emphasized the fact that epilepsy is not an entity, but that each case requires individual study and treatment. The apparent results of drugs are very misleading. It will not do to base conclusions on the action of remedies during two or three months, for in the natural history of the case

there may be periods of absolute or comparative freedom from attacks. To know whether epileptic seizures are really lessened in number, a drug must be given for at least a year. Tolerance is often established, the remedy fails to avert the epileptic catastrophe, and it cannot be said to have done more than postpone the storms that are often more severe than before. Nine cases of so-called epileptic insanity were treated with paraldehyde for four months with the result of lessening the attacks from twenty-five to seventy-five per cent. as compared with the five months previous, during which the patients received bromides and tonic treatment alternately. But during the four months following, the four that were signalized by such a happy diminution in the number of seizures, the results were disappointing. The attacks were not averted in the same proportion. And this is the history of many vaunted remedies. At the same time comparatively new remedies, such as antifebrin, antipyrine, borax, chloral, bromide of gold, etc., deserve a fair trial. Greater caution is needed in announcing results.

L. F. B.

FALLACIES IN CONCLUSIONS AS TO THE EFFICACY OF THERAPEUTIC MEASURES FOR THE RELIEF OF EPILEPSY.

("University Medical Magazine," Dec. 1890.) Dr. Theodore Diller endeavors to present a few words of caution against forming too hasty conclusions as to the value of any treatment in epilepsy, and pleads for more extended and careful trials of new remedies, and for more critical observations of the phenomena as they present themselves in each patient. He believes with Seguin that this disease is not an entity, but that each case requires individual study and treatment. The history of the treatment of epilepsy should teach us to be more cautious in announcing results, but the author favors giving a fair trial of antifibrin, antipyrine, borax and the other nerve remedies, only handling the subject more carefully. As to the question of eye-strain as a factor, he suggests that the ophthalmologist and neurologist work carefully together, thereby reaching a correct solution of the problem without unnecessary delay.

A. F.

FADS AND FANCIES IN THE PRACTICE OF
NEUROLOGY.

("St. Louis Courier of Medicine.") After briefly reviewing the history of the Brown-Séquard treatment, the suspension treatment of tabes, and the causation of neurosis by ocular defects and their treatment, Dr. L. Bremer says, regarding hypnotism, that it should not be eschewed as a therapeutic agent, but should only be employed where other means have been exhausted, and by those who are well grounded in psychiatry and neuro-pathology. Even such an expert should use this mysterious agent with the utmost caution. It will not do to dogmatically judge the merits and demerits of hypnotism, but our experience with it to-day is large enough to limit its uses to functional neuroses of an irritable character. He does not regard its use justifiable in minor operations, since it is a very dangerous procedure in some subjects, acting like the first hypodermic of morphine, or the first glass of liquor in the predisposed. It unfetters the fire which has been slumbering under the cinders, and intensified nerve disturbances rush into channels which before the hypnotic state were only of a rudimentary existence, and which now afford an easy flux of morbid ideas and propensities.

A. F.

PARALDEHYDE IN TETANUS.

Dr. V. E. Ignatieff (*Gazzetta Medica di Roma*, 16, 1890) proceeding from the experience of Russmant, Nopoff and Cervello, according to whom paraldehyde acts upon the nerve centres as well as upon the peripheric nerves, the writer prescribed it in two cases of tetanus (a boy of fourteen years and a woman of twenty-nine). Chloral had already been given in large doses without result. Paraldehyde was administered by the mouth and rectum, in daily doses of 3.75 to 9.40 grammes in the former (95.68 grammes in nineteen days), and 15 grammes in the latter case (450 grammes in thirty days). Both patients recovered completely. No disagreeable secondary action of the drug was observed, which occur so frequently after the administration of chloral in large doses. Dr. Tchervinsky communicated a case of tetanus to the writer which was also successfully treated with paraldehyde. Therefore, the author warmly recommends this method of treatment. The drug not only causes the convulsions to disappear, but also

at the same time diminishes the pain, quiets the patient, combats the insomnia and permits the patient to be fed, thus giving the organism the possibility of eliminating the virus produced by the pathogenic microorganism circulating in the blood.

P. and P.

PSYCHOLOGICAL.

THE DEGENERATIVE TENDENCIES TRANSMITTED BY DRUNKARDS TO THEIR CHILDREN.

Dr. L. Grenier has made an important contribution to the study of the above subject in his Thèse de Paris. His work is based upon 188 cases in which alcoholism was noted in the parents. The following are his principal conclusions, as given in the "*Gazette Médicale de Paris*," Feb. 7, 1891:

The pernicious influence of inheritance attains its maximum when one of the parents is intoxicated at the time of conception.

The children of drunkards show a marked inclination to excess in drink. About one-half become drunkards themselves.

The majority of the offspring of drunkards have convulsions in early infancy. Epilepsy in the children may be taken as presumptive evidence of alcoholism in the parents, when it is not the reproduction of the same disease in the latter, or the indication of a neuropathic disposition of a whole family.

Because of their unstable mental state, the children of drunkards furnish an enormous contingent to insanity. All varieties of insanity are found among them.

Alcoholic insanity is more frequent among the offspring of drunkards than among the parents themselves—an additional proof of intellectual degeneration.

J. W. B.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting of May 5th, 1891.

The President, Dr. L. C. GRAY, in the chair.

THE BACK IN "RAILWAY SPINE."

Dr. F. X. DERCUM, of Philadelphia, read a paper with the above title.

The speaker considered that the physical condition of the back had been insufficiently discussed.

"At the outset of our inquiry, we are met with the problem as to what extent pain, a subjective symptom, should be admitted as a factor. We all know that pain of various kinds is met with in railway cases. Now it has seemed to me that we should exclude from this discussion all pains, the existence of which cannot be confirmed by any physical evidence, and which rest solely upon the unsupported statements of the patient. Under this head come the vague aches, "weak feelings" and paræsthesias, which may be absolutely genuine, but, for the demonstration of which there are no known means.

On the other hand, all pain, signs of which are evoked without previous warning or suggestion, should be rigidly admitted. Under this head come all pains, signs of which are evoked during palpation, pressure, percussion and motion, either voluntary or passive.

To begin, it is impossible to separate sharply the symptoms elicited by palpation from those elicited by pressure. Curiously enough too, the very first symptom that presents itself for our consideration, namely abnormal sensitiveness of the surface, or hyperæsthesia, constitutes a borderland symptom between the subjective groups, the exact significance and value of which it is impossible to fix, and for the present at least this symptom must be set aside.

Very different however are the symptoms so frequently elicited by pressure. Here the patient distinctly reacts in a manner that unmistakably indicates pain. At the outset,

however, we must distinguish between two groups of symptoms radically different in their meaning and which are elicited according to whether the pressure is superficial or deep. In the first group we have the well known tender spots of so-called spinal anæmia, or spinal irritation, and which are now recognized as being related to purely functional conditions. As is well known they are elicited by comparatively slight pressure, and most frequently over the dorsal and cervical spine, and further, in the vast majority of cases the area of tenderness is small and distinctly limited. Whatever speculation we may indulge in as to their nature, whether we regard them as expressive of some nutritive or functional change, in deeper structures or relegate them to the great group of the inflexibles of hysteria, there can be no doubt that these painful areas are genuine. If, without telling the patient just what is being done or what drug is being used, an injection of cocaine be made into a painful spot, the latter, in the fraction of a minute or longer, disappears. At the same time, the painful spots above and below not so treated remain unchanged. Surely upon this and other grounds the inference is justified that we have an actual, a bona fide condition, to deal with.

Without pausing to assign this symptom, its proper place in the syndrome of railway spine, let us pass at once to the consideration of the symptoms elicited by *deep* pressure. In a large number of cases pain is not complained of unless the pressure made is decided. Care should of course be exercised in examining with deep pressure not to cause pain in the superficial structures, especially the skin. This can readily be avoided by pressing with the thumb, but with its palmar surface. One would of course not think of using a pointed instrument or the knuckles in making the test.

The pain elicited on deep pressure, differs, I need hardly point out, altogether from that elicited by superficial pressure. In the first place it differs in character. It lacks the acute sensitiveness of the painful spot. The patient reacts later and less suddenly. It utterly fails to resemble hyperæsthesia which the painful spot in some of its features approaches. Secondly, it is more diffused and instead of being found directly over the spine it is more apt to be found, and for some little distance, on one or both sides. Lastly, it very frequently bears in its position a distinct relation to the history of the accident. This I can best illustrate by citing one or two cases. First: A healthy young woman of twenty-four, while standing in a railway

station was struck by the pole of a loaded baggage truck. The truck was being pushed very rapidly, and the end of the pole struck her directly between the spinal column and the right shoulder blade. Two years and three months later, when first examined by me, I still discovered a very painful area upon deep pressure in this region, though I did not until afterwards learn that it corresponded to the site of the injury. Superficial painful spots were not present in this case, nor was the patient in the least degree hysterical. Another instance is the following: Second: A finely developed man of twenty-seven, a brakeman, was caught between bumpers while coupling freight cars. His back and left side were badly squeezed, though no bones were broken. Upwards of two years later he presented marked pain upon deep pressure in the lower lumbar and upper sacral region, especially toward the left, and in addition deep tenderness over and above the left iliac region. Neither hyperæsthesia nor painful spots were present. Both of these patients I should say had suffered from shock and still presented some asthenic symptoms.

Without pausing to multiply instances of this symptom, or to discuss its meaning, let us pass to the pain elicited by percussion. It is at once evident that pain elicited by percussion is without significance unless both superficial and deep pain upon pressure have been previously taken into account or excluded. Percussion is, of course, best performed with a rubber hammer, such as the Madison Taylor hammer used in studying the knee-jerk. The patient lying prone, extended and relaxed, a number of very rapid and not very hard blows should be made directly over the spine with the point of the hammer, the idea being to elicit pain not by the force of the blows but by the faint though decided jarring produced.

Aside from the fact that this method will frequently elicit pain in the bony structures when other methods either cannot be well applied or result negatively, it is not improbable that even pain having its origin in the spinal canal itself may be brought to light by this means. Two instances in my experience favor this view. One was a man in my care at the Philadelphia Hospital who fell from a wall some ten feet high, striking upon the lower portion of the back, and who subsequently developed a concussion myelitis. In his case, pain—absent in this region to other tests, was elicited in the lower dorsal and upper lumbar region by the hammer used in the manner described. The other case was the patient exhibited at the last meeting of the American Neuro-

logical Association, held in Philadelphia, who had been cured of paraplegia by the resection of a number of spines and laminae. In this man pain in percussion was one of the most definite and valuable symptoms present, and in the course of the operation marked inflammation of the dura with adhesions to the subjacent pia were revealed, while the fragments of bone removed appeared healthy. These cases are very suggestive, and it certainly is not improbable that this method of percussion—that is, the jarring produced by slight though very rapid blows—may be of decided value in cases otherwise obscure.

Having briefly touched upon the examination of patients by palpation, pressure and percussion, let us now turn our attention to the important tests by motion.

In regard to pain elicited by voluntary motion, the objection may properly be urged that here an opportunity is presented to the malingerer. However, there are, as will be pointed out, so many other means of ascertaining the truth at our disposal that difficulty in arriving at definite conclusions will rarely be experienced. In the first place, if there be pain on movement, there is an instinctive tendency to prevent all movement. The back is held very stiffly, and very frequently indeed the patient adopts peculiar and striking attitudes. Further, if the patient complain of pain on voluntary movement, passive movement of the trunk in directions and at times not expected by the patient, will generally act as a safe corrective to statements made by him. In addition certain physical conditions of the muscles are apt to be present, namely, the muscles of and in the painful area and its immediate neighborhood are apt to be in a condition of spasm either continual or coming on at such times when movement, either voluntary or passive, is attempted. This feature, when present, is most valuable, as it cannot be simulated and as it does away absolutely with the suspicion of malingering. Finally, the muscles which are in a state of spasm are painful when touched and are also in a condition of heightened reflex irritability.

Much depends upon the manner in which the various tests for motion be applied and it may not be out of place to consider them in detail. There are flexion forward, lateral flexion, torsion, and transmitted shock.

Having first practiced palpation and pressure and gleaned such information as can be obtained from these sources, we should closely observe the back as the patient stands before us, providing of course that he be not paraplegic. He is now directed to bend forward. The points

to which our attention should be directed are, the manner in which the act is performed, the amount of motion in the back itself, the stage in the act at which the patient complains of pain, if any, and the area to which the pain is referred, and finally, the occurrence of muscular spasm. If rigidity be a marked feature the patient will often merely throw the back forwards as one piece, motion taking place only at the hip joints. If urged to make more decided effort, the patient will frequently bend the knees, stoop, adopt in fact any expedient that will save the back. In cases less marked the patient will upon urging begin bending the back, but very soon will check the movement protesting that it gives him pain. Very frequently also decided spasm makes its appearance in the muscles at this time. The spasm when present is usually most marked, unless otherwise determined by some detail of the accident, in the lower dorsal and lumbar regions. In cases still less marked than the above, forward flexion may be almost completed before pain is complained of, or what is very important, motion may only be restricted in one part of the back. Thus a patient may hold the neck and shoulders very rigidly but flex the lumbar spine quite well, or there may be little or no movement in the lumbar region while the upper part of the spine is flexed considerably.

Supposing now that this test has not yielded decided results or that the patient in his unwillingness to bend the back has opened himself to suspicion, forcible flexion may justifiably be resorted to. Of course the adoption of this procedure depends absolutely on the good sense and judgment of the investigator. We should remember that the pain excited by forcible flexion is often extreme.

We next practice lateral flexion. Here the same points are of course to be observed as in forward flexion. It occasionally happens that in cases where forward flexion has failed to elicit symptoms, the latter are brought to light when the trunk is bent to one or the other side. This generally corresponds to some peculiarity of the accident. For instance in the case of the brakemen already mentioned who was squeezed between the bumpers of cars, my notes read as follows: "No pain upon forward flexion. Marked pain upon flexion to the right. Pain referred to left side and extending from ilium to lower ribs." It should be remembered that it was the left side especially which had been injured.

Should forward and lateral flexion have failed to elicit symptoms or should the latter have been doubtful, torsion may be practiced. An assistant kneeling before the patient

should firmly grasp the hips while the operator seizing the shoulders should gently, but firmly, rotate the trunk. If there be deep-seated soreness, the patient will soon give signs of suffering. This method of reaching for pain is a powerful one and is rarely of itself required as most pains are readily elicited by the flexion test. It may be however that in a given case the muscles of the back have suffered less than the fibrous tissues and smaller joints of the spine itself, and in such instance this test may be a very valuable one. While flexion both forward and lateral reacts upon the spine it reacts more perfectly upon the muscles. Torsion on the other hand reacts more powerfully upon the spine itself.

We now come to the test by transmitted shocks. This may be practiced in various ways. The patient standing as erect as possible the operator places both hands with fingers interlocked on the head and then by a sudden downward pull sends an impulse through the spine. The amount of force exerted must be gauged by the reaction of the patient. The spine may be so very sore that the reaction to even a slight impulse is excessive, and needless suffering may be caused. A gentle pull should first be made, and if no response is elicited from the patient a more, forcible one may be given.

If it be desired to eliminate the cervical portion of the spine from the problem, the patient may be seated and the impulse be transmitted through the shoulders. On the whole, however, this method will be found less satisfactory than the preceding.

A third method is to direct the patient while standing to raise himself upon the toes and then to let himself fall back easily upon the heels. This method is also less valuable than the first. A man with a very sore back can absolutely not be made to execute this test properly. At most it should be used as a confirmation of pain elicited by other means.

We have thus far considered, though briefly, the various tests for eliciting pain. Not only is it possible with due care to settle the question of the genuineness of the symptoms by any one of the methods detailed, but it is also evident that there must be a general correspondence in the results of all the methods. We should expect for instance that the area of pain upon deep pressure should correspond, other things equal, to the area of pain or motion, or that the region of pain elicited by percussion should correspond to the region of pain elicited by transmitted shock. Admitting then for the present the reality of the symptoms and with-

out pausing to discuss their probable lesions, let us turn our attention to a few typical instances of the railway back."

The Speaker then related the history of six cases, and presented the photographs illustrating the various altered positions, and accompanying spastic condition of the muscles of the back.

Stated Meeting of June 3, 1891.

The President, Dr. L. C. GRAY, in the chair.

THE CEREBRAL ATROPHIES OF CHILDHOOD, WITH SPECIAL REFERENCE TO SURGICAL TREATMENT.

Dr. M. A. STARR read a paper with this title. He said that the propriety of surgical interference in cases of cerebral disease was one of immediate and increasing interest, and therefore one which should be frequently discussed by those who were in a position to reach decided opinions. There were so many forms of cerebral disease in which the possibility of operations might be admitted, that a general discussion of the subject did not produce definite results; therefore he would devote this paper to a particular class of cases, viz., the cerebral diseases of infancy and childhood.

The immediate result of certain cerebral diseases in infancy was to produce certain definite symptoms, giving rise to three types of clinical cases: First, cases of hemiplegia, with or without athetosis; secondly, cases of mental defects of various grades; thirdly, cases of sensory defects of various kinds. And since epileptiform seizures, of the *petit mal* or *grand mal* type, were frequently met with in any of these forms, and might perhaps be the particular symptom in regard to which advice was sought, it was evident that the discussion must include the surgical treatment of non-traumatic organic epilepsy in children. The symptoms of the first class were the sudden development of a unilateral paralysis, after a series of convulsions attended by high fever, other febrile symptoms and a period of unconsciousness of varying duration; then a gradual improvement in the paralysis after all active symptoms of the onset had subsided; finally, a stationary condition, in which the face was hardly affected in its voluntary or automatic movements; the speech was usually regained, if it had been lost;

the arm was quite seriously paralyzed, the fingers being stiff and awkward, and sometimes being in constant slow, involuntary motion; the leg was held rather rigid, so that the child limped in walking and sometimes had a club foot.

In all cases the paralyzed limbs were found to be affected in their growth and development, so that they were smaller, colder, stiffer and weaker than the others; the reflexes were exaggerated, but the electrical reactions were not quantitatively changed, and sensation was normal. This condition remained through life as a permanent defect. In over one-half of these cases, epileptic attacks were of frequent occurrence.

The cases which dated from birth must be divided into those in which there had been evidence of traumatism during labor and those in which there was nothing about the delivery sufficiently unnatural to awaken suspicion of trauma. In the former class it might be stated that cerebral hemorrhage, usually meningeal, was the cause of the symptoms. In the latter class it was probable that an intra-uterine encephalitis or some unknown cause had prevented the foetal brain from developing.

The degree of spontaneous recovery in any case could be pretty well determined by an examination at the end of the second year; but it was evident from data on the question that a complete cure never occurred. The fits in organic epilepsy were more likely to be frequent and severe than in idiopathic epilepsy. These attacks did not destroy life, but of course rendered life a burden, and almost any means for their relief was countenanced. The second class of cases presented mental defects, rather than physical symptoms—defects which could not be educated out of the patients, in which no amount of training could produce an appreciation of the fitness of things. The third class presented no motor or mental deficiencies. Those affected were capable of training, but had defects of sensory perception which indicated gross cerebral disease. Many cases of deaf-mutism belonged to this class; also cases of hemianopsia.

In regard to this latter condition, the author gave the history of the case of a little girl, aged twelve years, who had suffered all her life from frequent attacks of *petit mal* and occasional attacks of *grand mal*. She had never been able to see objects approaching her from the left side. It was learned from the mother that the child had been delivered with much difficulty, that the labor had been

prolonged, that the head was greatly misshapen and had a large caput succedaneum over the posterior part. When the child's head was inspected, it was found that there was a perceptible flattening of the skull over the right occipital region. The eyes, when examined, showed a contraction in the visual fields. It seemed reasonable to suppose that this patient had a defective development of the right occipital lobe of the brain, and that this involved the cortex and also the subcortical tract. Wilbran had shown that a purely cortical lesion produced symmetrical defects in the visual field, while subcortical lesions produced asymmetrical defects. The pupils, in the cases reported, responded to light thrown upon the blind field of the retina; hence the lesion was not in the optic tract. There had never been any hemianæsthesia or hemiplegia; consequently the lesion was not in the thalamus or near the internal capsule. The patient had been brought for treatment for epilepsy, and it was an important question to decide in regard to the possible benefit of surgical interference.

The author thought that any solution of the problem of operative treatment must be based upon two considerations: First, the pathology of the cases; and secondly, upon the results of experience when such operations had been done. From the records of the pathological conditions found, two facts were elicited: First, the different clinical types were due to the different situation of the lesion, rather than to its varying nature; secondly, that the various processes of disease had, as a fairly uniform result, a condition of atrophy with sclerosis of the brain. In the clinical cases of the first type, the sclerotic atrophy involved the motor area of the brain, the central convolutions and their immediate vicinity, including the tract arising from them, and usually the basal ganglia as well. In the clinical cases of the second type, the sclerotic atrophy involved the anterior portion of the brain, and sometimes the entire hemisphere to a greater or less extent. In the third type, the sclerotic atrophy involved the posterior and lateral parts of the hemispheres. The hypothesis was that the origin of the disease lay in some interference with the blood supply of the part, since it had often been evident that the atrophy was limited to the region nourished by blood reaching it through one arterial trunk. This hypothesis was weak, from the fact that at autopsies it was very rare to find vascular lesions in the brains of infants. Consequently the pathogenesis of these defects was as yet quite obscure.

From the records of operations done upon six cases of the first clinical type, it was evident that this method of

dealing with the disease offered no relief. In regard to the second type, the author thought that the pathology contra-indicated an operation. To the third type, those of sensory defects, there were no facts of a surgical kind to present; but judging from the pathological resemblance between them and the first two classes, there was no reason to expect any different result from surgical treatment. It was concluded that (1) in infancy and childhood mental defects, hemiplegia and sensory defects, of a year's duration, were usually due to an incurable atrophy of the brain substance; that (2) in such cases surgical treatment could not afford any relief, for there was no probability of an increase of intracranial pressure to be relieved, and the pathological state was one which could not be treated; that (3) the sudden onset of such symptoms in childhood, while awakening a suspicion of cerebral hemorrhage, did not invariably indicate it, and could not be made the basis for an operation unless many other facts made the diagnosis quite clear; that (4) the occurrence of epilepsy in such cases might be made the basis of an operation, for while the epileptic attacks were of organic origin and would persist, their frequency might be much diminished. In such cases the opening in the skull should not be filled by bone.

It had seemed possible to the author that the existence of a movable connective-tissue valve of scalp covering the opening in the skull, and varying in its tension, might have something to do with the cessation of the fits. In watching such a valve, he had noticed great variation in its tension, and the idea of it as a safety-valve had been forced upon him.

Finally, he would urge upon neurologists the necessity of very great caution in recommending surgical interference in the class of cases which belonged to cerebral atrophies.

Dr. B. SACHS said that, on the whole, he was in agreement with the author of the paper, but that some of his views might be open to criticism. He thought that, as a general proposition, little could be gained in the treatment of the class of cases referred to by surgical operations, but that there was a decided field for the surgeon if the case was taken in hand early. He thought there was much more hope for these cases if they could be operated upon at the time of the initial lesion, before degenerative changes had taken place. He considered it worse than useless to operate in a case of sclerosis or porencephalus. He thought Dr. Starr was mistaken in saying that in every case there must

be widespread secondary degeneration. Secondary degeneration did follow many diseases of the brain, but not in all cases, he was satisfied.

The speaker was convinced that much good was done in the puncture of old hemorrhagic cysts; he had seen the epileptic attacks very much diminished by this procedure. In the radical treatment of cerebral atrophies, unless the entire diseased area was removed, no good could come of the operation. In regard to the safety-valve question, nothing could be gained by such an operation unless the dura was opened; even then, if epileptic attacks were to be cured, the centre from which they emanated would have to be excised. This latter operation might leave the patient with a paralysis, but with a cure of the epilepsy; which of the two was the greater evil would have to be determined by those most interested.

Where there was not thought to exist a sclerotic condition, and where it was supposed the initial lesion could be attacked, operation might be done; but it must be borne in mind that children did not bear surgical operations upon the brain as well as adults. The speaker did not see how Dr. Starr could make the statement that the growth of the skull and the brain was necessarily synchronous, when their growth was independent each of the other; however, when the skull ceased to be yielding, the brain was certainly at a disadvantage.

Dr. H. D. CHAPIN said that too early closure of the fontanelles was supposed by some to prevent evolution of the brain; but it was a question as to whether the closure was due to the microcephalus or to the reverse proposition. As to operation in these cases for the purpose of giving the brain more room, the speaker thought it just as well to let them alone, considering that it was not known whether the early closure had anything to do with the condition or not.

Dr. E. D. FISHER was in favor of operation in the class of cases referred to by the author of the paper. As soon as the first symptoms, such as convulsions and so on, appeared, even if this were during the first week of life, he would recommend operation, and at any time, if the case was seen before degenerative changes had taken place; even then he was not sure but that operation might do some good toward altering cell-growth and promoting improvement. Of course, if a case was diagnosed as that of porencephalus, operation should not be done. The speaker reported about thirty cases of hemiplegia in which the measurements of the

brain showed a very appreciable diminution on the diseased side. He thought that this was conclusive evidence of the condition, and that by operation something might be done to excite nutrition and growth.

Dr. W. R. BIRDSALL was glad to endorse Dr. Starr's conservative views in regard to operative procedures on this class of cases. Dr. Sachs had referred to irritation of the cortical lesion, which might set up beneficial changes. The speaker thought that this could just as well bring about a worse condition of affairs. As to many of the so-called atrophies, he thought that arrest of cerebral growth might take place without it being a true atrophy; that the cells retained their original condition without degenerative changes taking place. He thought that many of the clinical cases of retarded development were of this type, instead of that of sclerotic atrophy. As to operating on such cases, he would like to know what operators expected to find, and when they had found something, what they would do with it, and what good they could expect from such procedures any way. He thought that Dr. Starr's idea of a safety-valve, for the purpose of giving the brain more room, was far-fetched, inasmuch as the original trouble, whatever it was, caused an arrest of both brain and cranial growth. He might operate in cases of disturbance of the circulation, where the indications were clear and where the point of disease was likely to be found; but there was a great difference between operating in such cases and splitting open a microcephalic skull for the purpose of letting the brain grow.

THE PRESIDENT had seen many operations upon infantile atrophies, and had yet to see any good come of it, and, furthermore, he could not see how benefit could be expected from surgical interference in such cases. How could operation do any good at the time of an inflammatory attack of the brain, and how could it be of service when secondary changes had taken place? If the sclerotic area were cut out, would there not be left behind a similar condition of cicatrix and contraction? He thought that for record of cure, in cases of operation for cerebral epilepsy, to be of value, the reports had hitherto been made too soon, for the history of some cases without treatment showed spontaneous recovery and the attacks had not returned for years. He was satisfied that Dr. Starr was laboring under a misapprehension in thinking that premature ossification of the fontanelles induced brain pressure, although cases of epilepsy had been reported as due to this cause. He thought that

more was expected in the surgery of cerebral atrophies than would ever be realized.

Dr. STARR said it was all very well to talk of operating early in these cases, as one of the speakers had proposed, but who was to make such an absolute diagnosis and to decide when and when not to carry out such serious procedures?

Asylum Notes.

COMMITMENT OF THE INSANE.

By MARGARET A. CLEAVES, M.D.

The matter of the commitment of the insane is one of vital importance, and it is, therefore, with regret that we learn that a new law has been proposed in Pennsylvania, by Judge Brewster, providing for a jury of twelve laymen, who should judge as to the sanity of a person before his committal to an asylum.

In a paper read before the Section of Neurology and Medical Jurisprudence of the American Medical Association by Dr. N. Roe Bradner, of Philadelphia, the following objections were made to this proposed law, which in our judgment are pertinent: First, that laymen were not capable of acting as judges in these cases; that there was loss of time in the treatment of acute mania, which should be promptly treated, and that it was a great injustice to the families of these afflicted persons to give such publicity to their unfortunate condition. To this we would add that the injustice often done to the patient by the publicity of this method of commitment is greater still. A similar law, as is well known, has been in operation in Illinois for some years, while more recently such a one has been enacted in England.

The law in Illinois is found extremely objectionable in practice, and Dr. Sanger Brown, of Chicago, recently testified that the horror felt by insane persons and their relatives at the general character of the legal proceedings under the present law has led to the establishment of private institutions just outside the State, of which many avail themselves.

In England the new Lunacy Act is found to render the administrative machinery more cumbrous than ever. Much

time is lost in getting formalities arranged, much injury is done to patients, and much inconvenience and expense is incurred by relatives.

We sincerely trust that nothing will come of the proposed Pennsylvania law, as it cannot fail to be detrimental to the best interests of the insane. We echo the sentiment "that we have said there is no cruelty like the cruelty of ignorance; we shall have to admit that there is one form of it still more remorseless, and that is the cruelty of sentimentalism."

PRIVATE vs. PUBLIC ASYLUMS.

Dr. Bradner also discusses the private treatment of the insane in the same paper, and while recognizing the great value of public asylums, believes that the time has come when the private treatment of the insane demands greater attention.

Dr. Bradner objected to our public asylums on the ground that the medical attention was not sufficient, as the physicians in charge always had many more patients than they could properly attend, and as a consequence many cases which might be benefited by treatment became incurably insane because of this neglect. He seemed disposed to regard many of our public asylums as simply places of detention. Another objection raised by Dr. Bradner to public asylums was the class of attendants found in many of them, who are often secured because of their "brute force" and the cheapness of their service.

He based his plea for private institutions on the ground that the physician in charge would not have a greater number of patients than he could properly attend to; that the educated and refined would not be thrown together with the lower classes of society, as is often the case in public institutions; that the restraint would not be so severe and adapted more nearly to each patient.

The reasons given for the private institution are good ones, but we doubt if the percentage of recoveries would be markedly increased—that is one of the fallacies of all reasoning about the care and treatment of insane people. Insanity as it reaches asylums is largely an incurable disease, and one in which the most discouraging of all elements—heredity—enters with great frequency.

There is, however, despite this fact, much to be said for the private treatment of a considerable number of insane patients.

As a rule the saner the influences thrown about the insane, the better the opportunity for establishing right modes of thinking, acting and feeling. But this is not always true, and there are patients who do not improve under the most skilled treatment at home or in small private institutions, who improve rapidly in a large asylum without any especial treatment at all.

Insanity is characterized in all cases by a very exaggerated *egoism*, and in some cases excessive attention is positively injurious.

An increase in the number of private asylums, houses or retreats might bring about an increase of cures, simply because the patient (or those interested for him) would consent, at a much earlier stage of disease, to enter a private rather than a public asylum.

And when a voluntary commitment is possible, so much more readily will certain cases be placed under the conditions most favorable to recovery. Every makeshift is resorted to before the public asylum is considered at all. Therefore it is not the fault, but rather the misfortune of the latter institution that so many cases remain incurable.

There should be private asylums by all means, but if patients are not placed in them any sooner than in public institutions, the increased medical attention—made possible by the fewer numbers—the better classification, the individualized attention, the saner influences will be of little avail in increasing the percentage of cures.

The objection made to the present class of attendants in public asylums is not altogether a just one. The average human being could learn many a lesson from the asylum attendant in fidelity, patience, forbearance and kindness—qualities exercised under the most trying circumstances and without any previous training. Still we will hail the day when every State shall have an asylum, training nurses for the insane, "through whom the asylums shall become hospitals in truth, and both the humane and the scientific spirit invited to dwell therein."

"CAN THE GYNÆCOLOGIST AID THE ALIENIST IN INSTITUTIONS FOR THE INSANE?"

Such is the title of a paper read before the Obstetric Section of the American Medical Association at its recent meeting by Dr. J. S. Stone of Washington.

In no controversy do we ever find more forcibly exemplified the old legend of the knights and the shield than that

which goes on periodically between the gynæcologist and the alienist.

As with the knights, everything depends upon the point of view, and the shield takes on its golden or silvery aspect according to the side from which it is seen.

Unfortunately there is truth in the statement that all disease is colored by the nature of one's specialty. As a physician's nature is, after all, human nature and medicine not yet an exact science, this is not strange. But it is unfortunate.

Dr. Stone views the matter from the gynæcological side of the shield, and believes that the need for a gynæcologist in hospitals for the insane is an imperative one.

He had systematically investigated the present status of medical practice in the institutions for the insane in many States. His investigations opened up the fact that superintendents of asylums, with but few creditable exceptions, felt themselves competent to treat all cases of diseases of women, and were not at all gracious to outsiders, especially gynæcologists, who might endeavor to offer aid.

To his query, "Can the Gynæcologist aid the Alienist in the institutions for the insane," he received largely negative replies.

So far as he was able to determine, female diseases were seldom recognized, much less treated, by asylum physicians.

This led to the inquiry: "Why is it that insane women apparently do not have the same diseases that afflict so many sane members of their own sex?"

He drew the inference that asylum superintendents thought gynæcologists meddlesome and bungling men, who did more harm than good; and in closing, urged that the fullest details be obtained that we may know the real relation between diseases of the female pelvic organs and insanity.

Whether the position of the alienist, as set forth by Dr. Stone, is due to the fact that he recognizes in women other organs than the reproductive ones, we do not know. In any way, the possibility is rather refreshing, in contrast to the tendency to regard the ill health of sane women as largely due to pelvic disease.

Be that as it may, there is no doubt of the correctness of the position taken in regard to the lack of gynæcological work done in asylums.

Substantially the same proportion of insane as sane women will, upon investigation, be found to have the various forms of pelvic disease. It is equally true that, save in

exceptional instances, treatment is not instituted. But the fact should not be lost sight of that the removal of many a patient from the work, care and anxiety incident to her home life, from the bearing of children and exhausting influence of marital relations, to the rest, quiet and systematic regularity of a well-conducted asylum exerts a favorable influence upon many pelvic congestions, controls or restores disordered function and induces in some cases complete pelvic recovery. In other cases, because of the nature of the diseased conditions, no such good results follow, and no treatment being instituted, the latter estate of the patient is as bad as the first. *Mental* recovery, on the other hand, not only *may*, but *does* ensue, without recovery from the local disease; but in our opinion, it is not so sure nor so firmly established as though every organ had recovered its normal tone.

To the question forming the title of Dr. Stone's paper, an unqualified affirmative answer must be given; but as to the result being an increased number of recoveries, we doubt. However, the gynæcological work should be done, for in the securing of the highest physical *tone* the best mental results are to be hoped for.

But the gynæcologist should bear in mind that his excitable, irritable, depressed and erratic gynæcological cases are largely those who get dangerously near the borderland, but who, because of inherent strength of nervous organization, do not pass beyond it. To such women the removal of an offending organ, the cure of an irritative condition, restores mental and emotional equanimity. For the other, gynæcological treatment would have no such beautiful results. It is so easy for such to be insane, and they are insane not because of their diseased pelvic organs, but despite them.

Insanity is quite as often, if not more often, abdominal rather than pelvic in its origin, and a better practice, in the way of regimen and diet, based upon a better knowledge of digestion, assimilation and oxidation, in relation to health and disease, would bring about much more startling results in the treatment of the insane than would follow gynæcological treatment.

It is a matter of interest, in this connection, to state that for ten years gynæcological treatment has been systematically carried on, in one of the large public asylums, by the women physicians in charge. In the last report of that institution, the woman physician says:

"That the work inaugurated there ten years ago is still carried on systematically—there being regular days for

treatment—and that the result is to improve the physical condition of such patients and to contribute to their mental comfort and tranquillity.”

By all means the two should work hand in hand, but the gynæcologist ardor should be tempered by the alienist judgment.

GASTRO-INTESTINAL DISORDERS, ESPECIALLY CATARRH AND HEPATIC DISEASES, IN THEIR RELATION TO INSANITY.

At the last meeting of the Pennsylvania State Medical Society, held in Reading, June 2, 3, 4 and 5, 1891, Dr. Samuel Ayres, of Pittsburg, Pa., read the address, in “Mental Disorders,” upon the above subject.

The subject is one deserving increased attention. Dr. Ayres enlarged upon some of the obscure causes of insanity, including the relationship existing between dyspepsia and melancholia.

An unpleasant feeling in the body produces a corresponding feeling in the mind, and mental disorders are thus produced reflexly from physical indispositions.

The alterations in the liver in these cases are chiefly those of chronic congestion. Catarrh is probably the chief cause of these changes, while in many cases there is a feature of heredity. As a result of this catarrh, noxious gases, especially sulphureted hydrogen, distend the viscera, while ptomaines and micro-organisms are generated. All of these, together with the leucomaines which are not properly eliminated, are absorbed. Toxæmia follows, and is manifested by headache, vertigo, morbid thinking—the effects of the poisonous action upon the nervous system. Cathartics or diuretics generally avail to remove this condition; but let the toxæmia continue, and failure of the emunctories to act, and nervous and mental disorders follow, often resulting in insanity and suicide.

Acute mania and delirium may be explained on the hypothesis of infection from microbic action secondary to gastro-intestinal disorders.

Prophylaxis is the leading indication in the treatment of this condition. The question of heredity must be considered, while especial treatment of the catarrhal trouble should be instituted, especially associated with diaphoretic elimination of the putrefactive matter in the system.—*Medical News*, June 6, 1891.

HOSPITALS FOR ACUTE INSANITY vs. ASYLUMS.

YORKSHIRE, WEST RIDING—WAKEFIELD.

Dr. Bevan Lewis, the superintendent of this well-known asylum, gives expression to the following excellent views on medical work in asylums:

"That the large county asylums should eventually become receptacles for the hopelessly incurable chronic class, officered and managed upon a far more economical system than the present; that special hospitals for dealing with the acute insane, with a well-trained staff of experienced alienists, and affording facilities for a development of clinical teaching, should be instituted; and that they should constitute centres for scientific investigation and research are facts so self-evident that they require no further emphasis here."

Bearing directly upon this subject is the following, from the report of the

YORKSHIRE, WEST RIDING—MENSTONE.

Dr. McDowell, the superintendent, says:

"It is objected to the present system that patients are allowed to recover rather than attempted to be cured, and that the medical officers have their time too much occupied by administrative duties to allow them to devote sufficient attention to their purely medical work, or to carry on independent scientific investigation.

"Whether patients suffering from insanity would recover in greater numbers in a hospital situated in a large town, and provided with a staff of visiting physicians, than in an asylum in the country without such a staff, there is great room to doubt; but there can be no doubt that such a hospital would afford the visiting physicians very valuable opportunity for the study of insanity—opportunity not otherwise to be obtained.

"That the amount of individual attention paid to recent cases could with advantage be increased, there can be, I believe, no doubt, and this can only be attained by a corresponding increase, not only of the medical, but also of the nursing staff. The duties of a medical officer, as at present arranged, are such that much of his time is occupied in purely clerical work, the keeping of the cases alone, where there are numerous admissions, requiring several hours a

day. In some asylums, clinical assistants relieve the medical officers to some extent; but I believe the difficulty is to be more satisfactorily overcome rather by an increase of the permanent and responsible staff. The work and anxiety of the medical as well as the nursing staff vary rather with the number of admissions than with the numbers resident; but it is difficult to see how, even with an increased staff, the admissions are to be more equally apportioned to each medical officer. As the value of the work done in the pathological laboratory must often to a great extent depend on the clinical observation which has preceded it, it seems desirable that both clinical and pathological work should be carried out by the same observer."

MELANCHOLIA AS SEQUELÆ OF LA GRIPPE.

No more interesting report of the influence of the influenza epidemic of 1889-90 has fallen under observation than that embodied in the last annual report of Dr. Clouston, superintendent of the Royal Edinburgh Asylum.

An examination into the character of cases admitted during that period (1889-90) demonstrated two marked facts: First, that the general health of the patients admitted was much lower than usual, fifty having been admitted "in bad health and very exhausted condition," *i. e.*, in imminent risk of death, as compared with an average of thirty-eight during the fifteen previous years.

The other prominent fact concerning the admissions during the year was this: In the two chief divisions made of the mental conditions of patients, mania and melancholia, the number of cases of melancholia more than equaled those of mania, there being 140 of the former against 134 of the latter.

This is contrary to the usual rule, as mania commonly predominates. During the five years previous, 847 cases of mania were admitted to 617 of melancholia, or thirty-seven per cent. more cases of mania. In no previous year in the history of the institution had the number of cases of melancholia exceeded those of mania. Not that melancholia was a less common form of trouble than mania, if all who suffer from it are taken into account. In his experience the contrary was true; but much melancholia was never sent to an institution, and did not need to be sent. From his observation, he had concluded that the year 1890 was, with them in Edinburgh at least, depressing in its conditions to the

nervous tone and lowering generally to human vitality. Whether it was the influenza in the early part of the year that perceptibly lowered human vitality as a whole, or whether its presence merely showed that European humanity was in a lowered state of vitality, thus being a fit nidus for the influenza germs to propagate in, or whether it was the sunless, summerless general character of the year, he could not tell.

Dr. Clouston distinctly connects the increased number of melancholiacs with the influenza in some way. His experience, with that of medical *confrères*, he states, went to show that a considerable number of influenza patients felt great mental depression, both during and after attack had passed off, often for months. If a few with a tendency to insanity, of the thousands who were simply depressed in mind, became insane, the increased number of melancholiacs would be accounted for.

In his opinion the subsequent lowered nervous tone left as an evil residuum long after the disease had been recovered from had not had the attention paid to it that it deserved. He believes that the epidemic of 1889-90 left the European world's nerves and spirits in a far worse state than it found them, and that they had scarcely yet recovered normal tone. The influenza poison seemed to burn up the nervous energy, and leave the brain unable in some cases to recuperate.

OBITUARY.

It is with the most profound regret that we chronicle the death of Dr. RICHARD GUNDRY, superintendent of the Maryland Hospital for the Insane at Catonsville, near Baltimore, at that institution on April 23d. 1891. His death was caused by Bright's disease and complications.

Dr. Gundry was born at Hampstead Heath, near London, England, in 1829, and he was educated in a private school at Hampstead. In 1845 he came to America, and subsequently studied medicine with Dr. Chas. W. Covernton, at Simcoe, Ontario.

Entering Harvard, he took all the honors, and was graduated from the medical department in 1851.

He began practice in Rochester, N. Y., where he remained until 1854, when he removed to Columbus, O.

His alienistic career began at the Central Insane Asylum at Columbus in 1855. Subsequently he became superintendent of the Hospital for the Insane at Athens, O. In 1878 he became superintendent of the institution with which he

was connected at the time of his death. He was also Professor of *Materia Medica*, Therapeutics and Mental Diseases at the College of Physicians and Surgeons, Baltimore.

Dr. Gundry was a man of exceptional ability, and one of the best-known experts in diseases of the mind in this country.

He possessed rare tact and discernment in the treatment of the insane, and was one of the earliest of American superintendents to abolish the use of mechanical restraint.

For some years he was one of the most active and helpful workers in the National Conference of Charities, and through his papers, read before that body, exerted a widespread influence for good. Dr. Gundry was also a member of the Association of American Superintendents of Insane Hospitals.

His death is a great loss to the profession as well as to the hospital which he so long and faithfully served. His successor has not, to our knowledge, yet been appointed.

Miscellany.

HIGHER MEDICAL EDUCATION.

At a meeting of the Board of Trustees of the University of Pennsylvania, held May 21st, Dr. Pepper made an offer of \$50,000 towards an endowment fund of \$250,000, and \$1,000 annually towards a guarantee fund of \$20,000 annually, for five years, conditioned upon the establishment of an obligatory graded four-year course of medical study. This was accompanied by a communication from the Medical Faculty, pledging themselves to carry out this proposal, and to enter upon the four-year course in September, 1893. It was also reported that the members of the Medical Faculty had themselves subscribed \$10,000 annually for five years to the endowment fund. The Board of Trustees expressed warm approval of the proposed advance in medical education, but postponed their assent until the success of both funds had been demonstrated.

The approaching completion of the fine Laboratory of Hygiene, built by Henry C. Lea, Esq., will render the medical facilities of this school unequaled. It is to be

hoped that the necessary pledges will be secured promptly, as the interests of the entire community are deeply involved in the success of this great advance, which will enable medical students to obtain a thorough practical education in every branch of their profession.

Book Reviews.

ÉTUDES SUR LA RAGE ET LA MÉTHODE PASTEUR. 2d edition, pp. 440.

Par le Dr. Lutaud, Rédacteur en Chef du Journal de Médecine de Paris. Paris: 35 Boulevard Haussmann, 1891.

An object or an action changes materially its aspect according to the point of view from which it is observed. To any one unacquainted with the theories entertained to-day, concerning the intimate action of microbes and viruses, the whole question so savors of the mysterious that the accusation of charlatanism would readily and conceivably be made. A moment's thought to our comparative incompetence to give aught but theoretical explanations of the nature of even the most familiar phenomena would evidently moderate our intolerance of all that is new, although by no means implicate us in the acceptance of all that is presented to our judgment. A certain conception of the fallibility of the latter, perverted so frequently by local and personal needs and limitations, restricts inevitably our freedom of discussion, so that but comparatively few voices are raised in protest against any scheme that proposes to protect human life or further human interests.

Our author, Dr. Lutaud, animated, he says, by zeal against error and intolerance, takes up arms against Pasteur's method of treatment of rabies, which he discusses, using for that purpose a series of documents derived from private and public sources, and from which he deduces answers to the following questions:

- 1st. Was the biting dog rabid?
- 2d. Had the person, submitted to Pasteur's treatment, rabies?
- 3d. Why has the number of persons afflicted with rabies centupled since the inauguration of the new method?
- 4th. What is the nature of wolf rabies?
- 5th. Why is the attack of rabies severer when the bite is deeper?
- 6th. Why does the virus of rabies cause neither local nor general reaction?

Doctors, veterinaries, legislators, men in authority, of many countries, are put under contribution to prove, when possible by governmental statistics:

- 1st. The extreme rarity of rabies.
- 2d. Its enormous numerical increase since the initiation of the new therapeutical propaganda, indicating
- 3d. Its frequently suggestive character, as proven by the numerous cures effected by persons endowed by popular superstition with miraculous powers; and, again, by the recorded cases of persons dying when no other cause could reasonably be assigned than that of fright, the dog remaining healthy or the person having been neither bitten nor licked.
- 4th. The tetanic nature of the accidents in many cases.
- 5th. That the nature of the fatal paralysis consecutive to the Pasteurian treatment would denote a rabbit in lieu of a dog origin for the rabies, and hence be the direct result of the treatment.

Much time and wit have been expended by our author in exciting contempt for the scientific integrity of Pasteur, and to show that the latter's various discoveries have been the source of a great income to him, making it therefore incumbent upon him to lay such stress upon the value of his discoveries as would best enhance their commercial value and redound to his own monetary interest.

Time will naturally rectify whatever may be of error in these statements, which, however, as it is only fair to state, are substantiated by documents of serious import.

E. N. BRADLEY, M.D.

BOOKS, PAMPHLETS, ETC., RECEIVED.

PHILADELPHIA HOSPITAL REPORTS, 1890.

RESECTION OF THE OPTIC NERVE. By L. Webster Fox, M.D. Reprint.

THE EFFECT OF ARTERIO-SCLEROSIS UPON THE CENTRAL NERVOUS SYSTEM. By George J. Preston, M.D. Reprint.

REPORT ON THE OPHTHALMOSCOPIC EXAMINATION OF DR. PRESTON'S CASES. By Harry Friedenwald, M.D. Reprint.

HOW STAMMERING MAY BE CURED. By F. A. Bryant.

SECOND ANNUAL REPORT OF THE TRENTON EYE AND EAR INFIRMARY, from April 1, 1890, to March 31, 1891.

ABSTRACT OF PROCEEDINGS OF THE MICHIGAN STATE BOARD OF HEALTH :
Annual Meeting, April 14, 1891.

FIVE CASES OF SUPRAPUBIC CYSTOTOMY. By W. W. Keen, M.D.
Reprint.

PRELIMINARY PROGRAMME OF THE AMERICAN NEUROLOGICAL ASSOCIATION :
To be held at Washington, D. C., September 22, 23 and
24, 1891.

CATALOGUE OF THE JACKSON SANATORIUM. Dansville, N. Y.

THE INTRA-CRANIAL CIRCULATION AND ITS RELATION TO THE PHYSIOLOGY OF THE BRAIN. By James Cappie, M.D. Edinburgh :
James Thin, Publisher.

PROGRAMME OF THE NATIONAL PROHIBITION CAMP-GROUND ASSOCIATION :
To be held at National Prohibition Park, Staten Island, July 15
and 16, 1891.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

VASO-TONIC CENTRES IN THE THALAMI.

BY ISAAC OTT, M.D.

THE relation of the base of the brain to the main vaso-motor centre is an obscure territory. Danilewsky was the first to make a study of this subject. He found that irritation of the caudate nucleus as well as the lenticular caused a very marked change in the blood-pressure. By a weak irritation the arterial tension increased and the pulse was slowed, the individual pulse waves being greater. By stronger irritation the same result ensued, although in a more rapid manner. If the vagi and sympathetics are cut in the neck, then irritation of the striate bodies must be much greater to cause an increase in the blood-pressure. He admits that this may be due to diffusion of the current to the peduncles, which causes a rise of pressure. Removal of the brain anterior to the medulla shows a decrease of blood-pressure. Roy, in an article upon the blood supply of the brain, concludes that the chemical products of cerebral metabolism contained in the lymph which bathes the walls of the arterioles of the brain can cause variations of the calibre of the cerebral vessels; that in this reaction the brain possesses an intrinsic mechanism by

which its vascular supply can be varied locally in correspondence with local variations of functional activity. This view excludes the idea of any vaso-motor centre peculiar to the brain itself. Drs. Podanowsky and Popoff* have made a study of the action of antipyretics and found when the brain was divided behind the corpora striata the temperature of the skin showed no change, although the temperature of the skin could be raised by irritation of the respiratory centre by choking the animal. In the normal animal the temperature of the skin was elevated by the antipyretics. Hence they infer that an especial vaso-motor centre exists in the anterior part of the brain. My experiments were made upon etherized rabbits. The animal was bound down with his carotid attached to the kymographion, the skull having been previously trephined. To cause lesions in the basal ganglia, the "seeker" was thrust down to the base of the brain either with or without the presence of the cortex. After the lesion the pulse and arterial tension were noted. Punctures into the corpora striata or the space between them and the thalami cause no special fall of tension, but often rises. No constant effect was noted. When, however, the anterior half of the thalami was thrust into, then the pressure nearly always fell, never to rise again to the original height, although the pulsations were about the same in number. Fig. I. shows the effect of such a puncture. The arrow represents the time of the lesion, the dotted line the pulse, and the continuous line the arterial tension. The binding down did not cause this fall, as the effect of detention does not ensue in the first hour, which was about the time the observation was continued. The rate or the depth of the respirations was not perceptibly altered and did not influence the arterial tension. In other etherized rabbits the cortex was scooped out so that basal ganglia could be recognized. They were then punctured and the same result ensued when the thalami were wounded.

The effect of faradic irritation was tried upon the exposed basal ganglia.

* *Wiener med. Presse*, Dec., 1890.

Irritation of the striate bodies caused a slow rise, while that of the thalami was followed by a more rapid rise. But these irritations are not to be absolutely trusted, as spreading of the current can readily take place. These facts indicate that the thalami have an influence upon the vaso-motor system. I believe this action to be of a tonic nature, as

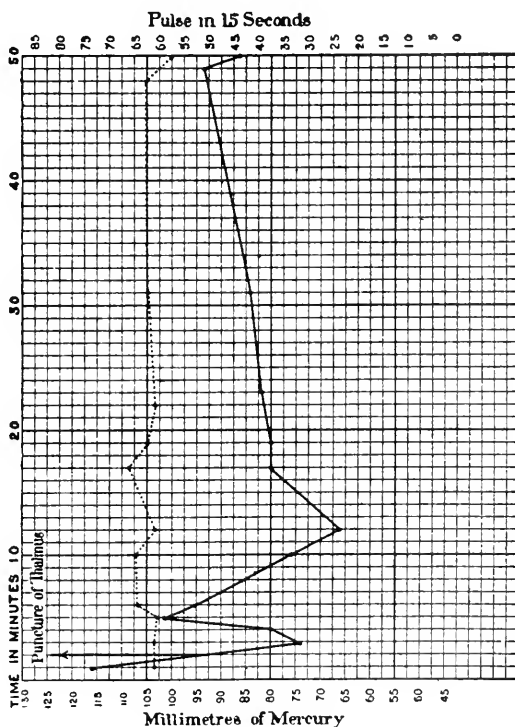


FIG. 1.

section just in front of the pons causes a fall of tension. That impulses set up by peripheral irritations reach the medullary centres by traveling around the gray matter about the anterior end of the third ventricle is shown by the experiment where heat is applied to the peripheral nerves to influence the respiratory centre through the thermo-polypnœic. I have in another place shown that the sphincters stand in a reflex relation to the thalami and

head of crura cerebræ. Hence it is quite probable that certain peripheral nerves stand in a reflex relation to vaso-tonic centres in the thalami, which have a tonic effect upon the medullary monarchical vaso-motor centre.

The preceding results are based upon forty experiments. As I do not wish to burden the JOURNAL, I give a few examples.

EXPERIMENT I.—RABBIT, CORTEX ON.

P.M.	Pulse for 15 seconds.	Pressure.
4.30.	51	64
4.30.15. Section through anterior ends of thalami.		
4.30.30.....	51	42
4.31.....	52	46
4.32.....	52	46
4.33.....	50	46
4.34.....	53	46
4.46.....	51	58
5.15.....	55	46

EXPERIMENT II.—RABBIT, CORTEX ON.

P.M.	Pulse.	Pressure.
4.25.....	53	90
4.25.15. Section through anterior ends of thalami.		
4.26.....	44	76
4.26.15.....	53	76
4.26.45.....	57	76
4.33.....	57	90
4.35.....	60	84
4.41.....	60	70
4.46.....	61	70
4.46.30.....	62	68
5.26.....	60	76

EXPERIMENT III.—RABBIT, CORTEX ON.

P.M.	Pulse.	Pressure.
4.30....	74	90
4.31. Section through the anterior ends of optic thalami.		
4.32.....	75	76
4.33.....	70	76
4.34.....	75	68
4.36.....	73	66
4.42.....	70	70
4.49.....	75	74
4.55.....	80	94
5.16.....	81	90
5.30.....	80	90

EXPERIMENT IV.—RABBIT, CORTEX ON.

P.M.	Pulse.	Pressure.
4.18.	62	116
4.18.15. Section through anterior ends of thalami		
4.18.30.	62	74
4.19.30.	59	80
4.20.	64	104
4.21.	65	96
4.26.	63	78
4.28.	62	66
4.33.	67	80
4.35.	61	80
4.39.	63	84
4.47.	53	84
5.15.	60	94
5.17.	60	88

EXPERIMENT V.—RABBIT, CORTEX REMOVED

P.M.	Pulse.	Pressure.
4.	73	110
4.01. Section of left anterior end of thalamus not injuring the crura.		
4.01.15.	74	104
4.02.	78	102
4.04.	73	104
4.15.	66	106
4.34.	52	101
4.45.	52	82

EXPERIMENT VI.—RABBIT, CORTEX REMOVED.

P.M.	Pulse.	Pressure.
4.30.	67	94
4.30.15. Section transversely through the middle of the thalami.		
4.30.45.	70	85
4.32.	60	90
4.33.	56	94
5.07.	64	76
5.17.15.	67	76
5.20.	66	77

EXPERIMENT VII.—RABBIT, CORTEX ON.

P.M.	Pulse.	Pressure.
4.23.	68	110
4.23.15. Anterior ends of corpora striata cut.		
4.23.30.	70	104
4.24.	62	110
4.25.	69	110

4.27.....	70	110
4.30.	65	116
4.37.....	65	120
4.41.....	68	120
4.46.....	63	120
5.18.....	60	100

EXPERIMENT VIII.—RABBIT, CORTEX ON.

P.M.	Pulse.	Pressure.
4.36.....	52	100
4.36.15. Puncture into the space between corpora striata and optic thalami.		
4.36.30... .	56	102
4.37.....	54	102
4.38.....	56	102
4.40.	65	96
4.46.....	70	90
4.54.....	73	84
5.17.....	68	92

ANATOMICAL RELATIONS OF THE CEREBRAL ARTERIES.

The *Neurologisches Centralblatt* of March 1st, 1890, gives a summary of a recent work of Alessandro Tedeschi on the above subject.

Tedeschi made numerous injective experiments on men and animals (sheep and calves). Apart from some individual differences in the branching of the vessels, the following are his conclusions:

1. The arteries of the cortex of the brain are not terminal arteries; hence we cannot speak of definite vessel-territories in the cerebral cortex.

2. The cortical arteries of the cerebrum anastomose with the cortical arteries of the cerebellum.

3. The arteries of the base of the brain communicate with those of the cortex.

4. There are anastomoses between the arteries of the two sides, both in the cortex, and at the base of the brain, especially in the latter region.

5. The arteries communicate with the veins, not only by means of the capillaries, but also directly, and thus communication is easily demonstrated both in the choroid plexus and in the brain substance.

J. W. B.

SOME EARLY PSYCHICAL SYMPTOMS OF TRAUMATIC BRAIN INJURIES.*

By T. D. CROTHERS, M.D., Chairman,

Hartford, Conn.

THE department of neurology in the practice of medicine has attained such proportions that it would be almost impossible in the limits of a single paper to give any complete history of the advances of even one year.

In this country there are six large journals devoted exclusively to this branch. Five quarterlies and one monthly, viz.: *The Journal of Insanity*, the *Alienist and Neurologist*, the *Journal of Psychology*, the *Journal of Mental and Nervous Disease*, the *Journal of Inebriety* and the *Review of Insanity and Nervous Diseases*.

Abroad, the periodical literature is more voluminous, and books and pamphlets follow each other rapidly. A neurological library of to-day, to be complete, would number thousands of volumes and pamphlets. This would be exclusive of the literature which appears in the general journals, comprising records of cases, theories and discussions of diseases of the brain and nervous system.

The different fields of neurology have been studied, until the specialist finds it almost impossible to master more than a single phase of the subject. The lunacy specialists; the specialists of nervous diseases; the specialists of alcohol and drug diseases; the specialists of idiocy and congenital diseases; the experimenter and teacher of psychology, and the electrician, are all examples.

The unknown regions of the physiology and pathology of the brain and nervous system are attracting an increasing

* Address before Section on Neurology and Medical Jurisprudence of American Medical Association.

number of most ardent students, and already the discoveries are very numerous and startling, and the process of learning and unlearning is more and more difficult.

In the department of *Medical Jurisprudence* progress and change is less rapid. Seven medico-legal societies and one large quarterly present the many practical topics which are constantly appearing.

The confusion of theory and practice in both law and medicine, relating to questions of crime and responsibility, has given rise to many strange conceptions of the teachings of science. Thus from the text-books and legal rulings of judges, the lines of sanity and insanity are laid down as absolute facts. Free will and accountability, judgment, punishment, equity, with brain control and capacity, are regarded as settled facts, based altogether on theory. All these questions comprise a realm of the densest superstition and error that will continue until studied scientifically. To-day the student of medical jurisprudence must pursue his studies above all present theories, text-books and rulings of law. The questions of motive and human conduct must be decided from a knowledge of natural laws of physiological and psychological growth. Science calls for a great revolution and evolution in the medico-legal solution of many of the disputed questions of to-day.

The insane, the inebriate, the defectives of all grades and conditions, and the tramp and criminal can never be restrained or prevented from being sources of peril to all law and order on theory, or metaphysical abstractions of mind, or legal rulings.

Medical jurisprudence of the future must depend on the progress of scientific medicine.

Both neurology and medical jurisprudence are largely influenced by the neurotic element of American civilization. This is a tremendous factor in degeneration and disease, and enters into all degrees of life and living.

The family physician and general practitioner are most favorably situated to become the earliest and most accurate students of most of these confusing problems in neurology and jurisprudence.

Every year it is more and more apparent that the failure to recognize the early symptoms of brain degeneration and disease constantly increases the army of incurables. The crowded insane asylums, almshouses, jails and hospitals all refer back to early neglect and failure to recognize and supply the means of prevention and cure.

A clearer knowledge of neurology would point to conditions and methods of treatment that could be successfully applied at that time only. An outline view of some of these early stages is the central topic of this paper.

There is probably no one disease more often mistaken in its early stages than general paralysis. Even after the symptoms have become apparent, there are confusing halts and a delusive masking of symptoms that often puzzle even experts. A long formative stage precedes the well-defined symptoms, beginning in slight changes in conduct and character. Elation of spirits, increased activity of the intellect; the disposition, the manner, the temper, the habits and general character all become altered. Then come acts and words that are unusual; the friends and associates are conscious of some change which they seek to remedy by moral advice. Finally, when some reckless conduct or strange disposition are manifest, the physician is called and the disease is clearly made out. To the patient this has no foundation in fact, and sometimes the physician joins in his belief, and explains these changes of mind and conduct from some moral basis. Symptoms of alcoholic and sexual excesses are explained in the same way. After a period extending over months and years in many cases, the disease is above all question, and beyond all medical skill. This formative stage has been attended by distress, loss, sorrow and most serious blunders. In some cases criminal acts and sad domestic and pecuniary afflictions have marked this period. If the family physician had made an early diagnosis and the treatment been based on this, a different history and result would have followed.

Some of the ataxes have a similar obscure early stage, marked by physical disturbances which are regarded as moral lapses. Nearly all forms of insanity begin with

this obscure failure of the high brain centres. Early changes of temper, conduct and character, defects of emotional control, defects of reason, slight and obscure at first, and yet clearly they are coming shadows of disease that should be anticipated and pointed out.

These changes and early symptoms are not new to science, but in most cases they are overlooked, and seldom receive the attention they deserve.

There is a class of symptoms that are already becoming the centre of grievous controversy. They are not only not recognized in the early stages, but are sharply disputed by both laymen and physicians. I refer to the alcoholic, opium and other drug symptoms, which are affirmed to be purely vicious acts and the voluntary giving way to the lower animal impulses. Public opinion has sought to control them by fine and imprisonment. The medical profession accepts this theory, only asserting that after a time the use of these drugs bring on diseased states. The impulse for alcohol and other narcotic drugs is always a symptom of some form of brain palsy. There are two classes of these cases in which this fact seems very clear.

The first class have a history of some distinct traumatism: notably, sunstroke, blows on the head, profound wasting illness and severe injury of any kind.

Recovery follows, but with it appear changes of temper, character and emotions; then comes the drink impulse or the use of some form of opium. These drugs cover up other changes and are interpreted to be the cause of all subsequent degeneration and disease.

Many of these cases die of pneumonia or some acute disease, others go on to insanity and become inmates of asylums, while the majority remain as common drunkards or inebriates slowly growing worse year after year. They are treated as low, voluntary inebriates, despised, persecuted and punished, and die the centres of wretchedness and misery, and frequently leave defective families that are always burdens to the world.

The *second class* of inebriates or drug-takers have a distinct history of psychical traumatisms. A man previously

temperate and well will have a history of profound mental shock, such as sudden, overwhelming grief at the loss of wife, or children, or property, or the failure to realize some absorbing ambition, or some calamity that will distress him acutely. His entire character and disposition will change, and the drink impulse will appear suddenly without any cause and continue persistently.

Several instances have been noted in which the effect of a railroad accident, where no external injury was produced, was the beginning of the drink impulse. The shock of sudden fear seemed to so paralyze the brain as to demand alcohol or opium ever after. In these cases alcohol may be taken at first as a medicine and in moderation, but the degeneration which calls for it is apparent when efforts are made to discontinue its use. Another class of cases show these symptoms especially marked. Thus persons who occupy centres of great care with business or professional responsibility; persons who are most active in business in the prime of life, previously temperate, who suddenly begin to take spirits and rapidly become excessive drinkers and defenders of its value as a medicine. Such cases are soon incapacitated and die. The drink symptom is always treated as a moral condition in these cases.

In the first class of physical traumatisms some form of brain degeneration is apparent, in this morbid impulse for alcohol and opium. The beginning and progress of the case confirm this. In the second class of psychical traumatism a brain palsy and sudden perversion of brain function and activity takes place, and the demand for alcohol and opium is the expression of this state. In the third class, the use of spirits is a symptom of exhaustion and general brain failure.

All these forms of palsy and degeneration are rapidly intensified by the chemical action of the spirit or drug used.

The pathological condition which calls for relief by these drugs has a uniform order of events, beginning at a certain point and passing down, marked by a regular suc-

cession of symptoms, reaching a certain termination that rarely varies.

The drink craze is a symptom which should never be misinterpreted or overlooked. Any one who persists in using alcohol or opium to excess is suffering from some brain degeneration and disease, which requires medical study and care. The use of alcohol or other drugs is, in a certain number of cases, a marked symptom of insanity. This fact has been noted for many years, and generally occurs in neurotics, who, after some great strain, or mental perturbation, become excessive users of spirits, and continuously or at intervals stupefy themselves with such drugs. When arrested and deprived of spirits in jails, acute mania or melancholy follows; then it appears that the spirit and drug craze were only symptoms of insanity concealed and masked by the spirits.

The facts in this direction are numerous and startling, and largely unknown except to the few students who are at work in this field.

Scientific study has established this fact, viz., that the "drink craze (meaning the impulsive, unreasoning desire for spirits or narcotics) is a symptom of disease." Whether this is so in all cases at the beginning is not yet established; yet nothing can be more certain than this, that the use of spirits is both a symptom and cause of disease and diseased conditions in all cases.

Another fact is becoming more prominent, that the number of inebriates of all forms is increasing; and with them the army of neurotics and defectives are likewise rapidly growing larger.

The problems of causation, prevention and cure are still involved in the realms of obscurity and quackery. Great parties and numerous societies are attempting its solution from the moral side alone.

As a scientific problem it is practically unknown, and yet no question of modern times is so eminently one of causes and conditions that are tangible and within the range of science to understand.

The neurologist must point out the road and stimulate the family physician to study these early psychical symptoms, which, like signal flags of distress, are becoming more apparent.

Scientifically the abnormality of an increasing army of neurotics and suicidal drug takers, who receive no care or medical attention until they are chronic, is a reflection on modern medicine. Over five millions of laymen in this country are agitating the question of means and remedies to check this disease. Of the sixty thousand physicians, less than a hundred have given any special attention to the cure and preventions of this wide-reaching malady. The specialists can study these cases in asylums, but the family physician must be the scientific student to point out the early causes and remedies. The drink problem can never be solved except from physiological and psychological study. This must begin with heredity, growth, nutrition, culture, surroundings, and all the phenomena of life.

The early psychical symptoms must be studied, also the traumatisms, the beginnings of pathological changes, that manifest themselves in the drink impulse.

This is the path along which science must seek the solution of this problem. The temperance agitator and reformer must give way to the physician. The roar and conflict of parties and societies will die away, and only the voice of science will be heard. Then the armies of inebriates, criminals and insane will be halted, disbanded and forced back to health and rational living. The incurables will be protected and housed. The saloon will disappear and alcohol will be unknown as a beverage. This will be a reality when medical men take up this study from a purely scientific point of view.

NEURASTHENIA.*

By PROF. BOUVORET,

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NEURASTHENIA, or nervous exhaustion, is a disease of the nervous system without organic lesion, which may attack any or all parts of the system, and characterized by chronic enfeeblement of the nervous force, which may have all degrees of severity, from slight loosening of these forces down to profound and general prostration.

Symptoms of excitation are most always added to those of depression, a condition very exactly expressed by the term, irritable weakness.

Clinical observation justifies us in attributing the symptoms of neurasthenia to a disturbance of the nutrition of the nervous elements (Erb), to an impoverishment of the nervous force, and especially to a chronic enfeeblement of the superior nervous centres which regulate the activity of the inferior centres, situated in the cord, the sympathetic, etc.

Neurasthenia, if we include the lighter forms of the disease, is a common affection, especially in civilized countries where the struggle for existence demands unusual activity of the nervous system.

Heredity plays an important part in the causation of the malady, although there are cases in which its action is not present.

Those of hereditary origin generally occur between the ages of 15 and 20, while the acquired form is observed at a later period—30 to 40 years.

The Slav and Jewish races are specially predisposed to neurasthenia. Certain professions are also apt to be affected.

The exaggerated action of the brain, in the sphere of the intellectual faculties, is the most common and best established cause of nervous prostration.

* Translated by Dr. W. F. Robinson.

Neurasthenia is common in those who suffer from the abuse of alcohol, tobacco, morphine, ether, chloroform and cocaine. Excessive muscular exercise and sexual excess also contribute very largely to this end. Uterine and peri-uterine affections are quite unimportant in the causation of this disease. In a great majority of cases the local pains, neuralgias and the sexual excitement are more the symptoms than the causes of feminine neurasthenia. If the patient gets into the hands of a specialist who directs her attention to these organs, she finally becomes so that she has a pessary in the brain, as Playfair expresses it, and the troubles of the nervous system become worse and worse. Nervous dyspepsia, more or less severe in form, most always accompanies the other symptoms of neurasthenia. It frequently appears at the same time as the headache, insomnia, etc., and may, therefore, be taken for the cause of the other symptoms, which is a mistake, however, since there is a primary cause behind all these symptoms, and upon which they all depend. Cases of neurasthenia are becoming to-day more and more frequent—a natural result of the fact that the factors which produce this disease are more common and more active than ever.

The following are some of the principal clinical forms of this disease:

1st. Neurasthenia in women.

Weir Mitchell has given us a striking picture of this form: "A woman between 20 and 30 years of age is exposed for some time to continual worry of mind, or to bodily fatigue. She becomes thin and pale and loses her appetite. Sewing, writing, reading, and all kinds of occupation become a burden to her. If uterine trouble is not present it soon appears, and local treatment, if applied, does little or no good. Dyspepsia and constipation complicate the case, and the woman goes steadily downward until she reaches a physical and moral condition pitiable to behold."

2d. Traumatic neurasthenia.

This form is quite common, and is distinguished by the frequent occurrence of hysterical symptoms. It is often ob-

served in hospital practice, and is one of the most obstinate and intractable forms of the disease.

3d. Neurasthenia of the common type.

In this form the symptoms are numerous and peculiar, and combined in such different ways that no two cases are alike.

The following are some of the principal ones:

1st. Headache. It is very frequent, but as a rule not severe, being rather a feeling of weight or fullness. Pain in the back of the neck is a very common symptom of this disease.

2d. Insomnia.

This symptom, often absent in feminine neurasthenia, is almost the rule in those forms which are due to mental overwork. In certain rare cases the insomnia is replaced by an unconquerable desire to sleep. Neurasthenic insomnia is extremely obstinate and rebellious to treatment.

3d. Cerebral depression.

There is often present in this disease a remarkable enfeeblement of all the mental faculties, as the memory, judgment and will-power. The weakness of the will is very evident, and it is the key-note of the patient's moral condition.

4th. Muscular weakness.

Most neurasthenics complain of a general weakness of the muscles. On slight provocation they are seized with a feeling of debility and weakness, often accompanied with pains in the calves and thighs.

The neurasthenic patient should be examined with care and tact, for they often try to conceal some of their symptoms, especially those relating to the brain.

Vertigo is a common symptom, and may come on at any time without regard to digestion.

A peculiar class of symptoms are the morbid fears of various kinds. Agoraphobia or fear of places; a strange, vague fear which seizes the patient whenever he finds himself in a certain place. Others are troubled with fear of closed places, and cannot go to the church or theatre without feeling an uncontrollable desire to escape. Another

class are afraid of being afraid, or they are afraid of everything.

Sensory troubles are present more or less in all forms of this affection. Sensation may be diminished or increased, but complete anæsthesia never occurs.

Most neurasthenics present disturbances of the digestive organs, which in certain cases may dominate all the other symptoms. The bad feelings may come on directly after eating, or they may delay for an hour or so. There is a feeling of tension and fullness, and the epigastric region is distended. The dilation of the stomach which is sometimes observed is not permanent, and is only to be noticed after eating. When the symptoms of nervous dyspepsia last for any length of time, the general nutrition suffers profoundly, and the patients lose their strength and become thin and pale. The appetite is rarely regular, generally very capricious. Anorexia of a high grade is sometimes present. On the other hand patients are occasionally affected with bulimia. Nervous vomiting is sometimes met with, comparable to that which is seen in hysterical cases. Constipation is the rule in these cases.

Women will often have a frequent dry, painful cough, simulating that of commencing phthisis.

In young neurasthenics an abnormal excitability of the genital organs is sometimes observed, but the symptoms of depression are more common. These are seminal losses, and, later on in the course of disease, impotence.

Outside of the principal forms of nervous exhaustion there are many clinical types of the disease, which are founded on the different grouping of the symptoms and the predominance of certain functional troubles.

First we should distinguish the spinal from the cerebral form. In the latter the principal symptoms are: the headache, the feeling of constriction about the head, the pain at the back of the neck, the mental depression, the excitation of the senses, especially those of sight and hearing. The aggravation of all the symptoms under the influence of intellectual effort, the morbid fears, the enfeeblement of the memory and the will, gastro-intestinal atony with chronic

constipation; sometimes, also, disturbances of the general sensibility as well as those of the motor system, as for example the cramps of the muscles, coming on when about to fall asleep.

In spinal neurasthenia the principal symptoms are: rachialgia, hyperæsthesia of the vertebral column, neuralgic pains in the chest and in the limbs, formication and cramps in the arms and legs, muscular weakness, spermatorrhœa, impotence, coldness of the hands and feet, vasomotor disturbances and gastro-intestinal atony. In addition several clinical forms of this trouble may be distinguished, affecting certain spinal centres. In certain cases pains in the back, intercostal and abdominal regions are the predominating symptoms. In others the genital organs are specially affected, and in still another class of cases, the symptoms are those of commencing locomotor ataxia.

In the great majority of cases neurasthenia is a chronic malady of very long duration; nevertheless there is an acute form, and there are numerous observations of cases which have come on suddenly and lasted but a few weeks. In certain cases death has ensued, and yet the autopsy showed no lesion whatever to account for it.

In the great majority of cases the prognosis is good, at least as far as life is concerned, and proper medical treatment is of the greatest possible value. Many cases of the acquired form can be completely cured, and others can be very much helped. It must be understood, however, that neurasthenia may lead to suicide, and that by enfeebling the organism it may predispose to tuberculosis and other intercurrent maladies.

The symptoms of neurasthenia should be well understood, otherwise they may be mistaken for the beginning of organic disease of the nervous system.

Cerebrasthenia may be confounded with general paralysis, cerebral syphilis or brain tumor. In making the diagnosis too much importance must not be given to any one symptom, but the totality of all the symptoms must be considered.

It should be noted that in neurasthenia reflex action is generally increased, while in most organic affections of the nervous system it is diminished. It is very easy to confound hysteria with neurasthenia, since there are cases that are actually between the two, and still other cases in which the two diseases combine. Finally there are a whole class of neurasthenics who are often called rheumatic patients. They suffer with flying pains in the limbs, trunk and head, and are apt to be worse at the approach of storms. These pains are nervous in their nature, and a careful examination of the patient will show clearly what they are.

The moral influence which the physician has over the patient plays a most important part in the treatment of neurasthenia. Indeed, in order to accomplish anything the doctor must have his patient's confidence, and also authority over him.

The best treatment seems to be that of Weir Mitchell, being a combination of isolation, rest, massage, electricity and diet. The isolation is indispensable and should be complete, the patient being taken entirely away from her ordinary surroundings. In the graver forms of the malady rest is quite as important as the isolation. It should be complete and absolute during the first weeks, the patient remaining in bed and condemned to total inactivity. The massage supplies to the muscles a sort of passive function, which counteracts the bad effects of the inactivity. The electricity fulfills about the same function as the massage. The interrupted and induced currents are employed by Dr. Mitchell.

The massage and electricity have an excellent effect upon the digestive functions, and render over-feeding possible. In the case of fat and anæmic patients skimmed milk alone is given at first in large quantities, and gradually reduced until the patient loses considerably in weight. A more generous diet is then given, different articles being added by degrees. Certain medicines may be employed, as black coffee or aloes for the constipation, iron for anæmia, etc. The habit of taking narcotics for the nerves or to produce sleep should be vigorously combated.

The method of Weir Mitchell is indicated in the severe and obstinate forms of the disease, when the will and moral force have been profoundly affected. The acute and sub-acute lesions of the uterus or its adnexæ contra-indicate this method of treatment, which is not the case if these affections are chronic.

It is often very difficult to make the patient accept the isolation from his or her family and friends. Now there are certain cases of neurasthenia resulting from excessive intellectual labor, too close attention to business and the like, where this isolation is not all necessary. In cases where the symptoms are all referable to the brain, rest is not always required, and in certain cases it may even do harm. Rest is indicated in all forms of pronounced anæmia where the spine is principally affected, or where the case is accompanied with severe gastro-intestinal atony. Absolute repose of the brain is indispensable in the intense forms of neurasthenia, but with the exception of these cases it is better to allow a certain amount of mental activity to the patient, directing it if possible to new and agreeable subjects.

Electricity has numerous applications, and Beard has recommended the general galvanization of the integument. General electrization may also be given by means of the interrupted current, and if applied in the evening often acts much better than drugs in producing sleep. The local application of the continuous current to certain organs specially affected, as the stomach, intestines, etc., is often very efficacious. Large electrodes should be employed, so that the current can enter through the large surface.

Hydropathy is often useful, care being taken to avoid the severer processes. A most excellent method is to wrap the patient up in a sheet wrung out in tepid water, and then employ friction for one or two minutes. The temperature may be progressively lowered as the operation is continued. A short, cool bath is often excellent when the prostration is very marked, and a tepid bath is also very good in conditions of abnormal excitation. On these conditions sea-bathing is generally contra-indicated. At the commencement of the trouble the douche or shower-bath

given with cool water, and directed to the back or abdomen, is very efficacious.

A visit to the mountains is of well-recognized value in neurasthenia, and an elevation of from three to four thousand feet is generally sufficient. The cure should take place in the summer, and should last from six weeks to two months. Great care should be taken that during this time the patient does not overtax his strength by too long walks.

As to drugs, the bromides should be given when there is much cerebral excitation or severe pain. Chloral and paraldehyde may be prescribed when obstinate insomnia is present. The doses should be large and given two or three times a week.

ISOLATED PERIPHERAL PARALYSIS OF THE SUPRASCAPULAR NERVE WITH ATROPHY.

In the "Medical Chronicle," March, 1891, Dr. Benzler reports the case of a man, aged 22, who began to suffer with pain in the right shoulder, followed by increasing weakness in the arm. After a time improvement began, but both the infra and supra-spinati muscles were left atrophied. The right arm was more abducted from the side than the left, and the raising of the extended arm upward and outward took place easily, but not so vigorously as in the other arm. Asked to place the right hand on opposite shoulder, he raised the arm at right angles to the trunk to the horizontal position, then drew it over by the pectoral muscle to the opposite shoulder. There was a tender point where the nerve turns over the collum scapulæ. Electric examination only showed partial reaction of degeneration. The author considers this a case of peripheral neuritis, and has known enteric fever to be followed by a similar condition. Of four recorded cases, one followed emotional trouble (teres minor unaffected), another had a chill, while in two others, carrying a heavy weight and a fall were apparent causes. In Dr. Benzler's case the etiology is obscure, but he says the symptoms confirm Duchenne's view that the supra-spinatus muscle raises the arm while bringing it also forward and outward. The prognosis is favorable, as there is only partial reaction of degeneration, but recovery will take a long time.

A. F.

THE REVIVAL OF PHYSICAL EDUCATION AND PRACTICAL HYGIENE.*

By EDWARD M. SCHAEFFER, M.D., of Baltimore,

Member of the American Association for the Advancement of Physical Education.

DR. OSLER, of the Johns Hopkins Faculty, recently told a popular audience that a desire to take medicine is perhaps the great feature which distinguishes man from other animals. His plea was that our patients shall follow suit in the advance taken by the profession, and accept the prescription of a "little more exercise, a little less food and a little less tobacco and alcohol"—in brief, evince a greater reliance upon what constitutes the fundamental part of our Art, outside of surgery, viz., the precepts of hygiene and dietetic science. Voltaire wittily defined the physician to be an unfortunate gentleman expected every day to perform the miracle of reconciling health with intemperance; and Addison realized that physic, for the most part, is nothing else but the substitute of exercise and temperance. "A man may boast that he has learned how to evade nature's laws," says Emerson, "but the brag is on his lips—the conditions are in his soul." When I read in a modern magazine the charge that "physicians are too busy studying disease to pay any attention to health, and that in learning the nature and effect of remedies there results no time or inclination to learn the laws by which remedies would be rendered useless," it seems evident that the doctor's etymological rôle of teacher, and the *physician's* province of expounding the *nature of health* may be resumed, and entered upon, with advantage.

Galen declared him to be the best doctor who is the best teacher of gymnastics; and, as he became physician, or medical director we would now say, to the gladiatorial

* Read before the Medical and Chirurgical Faculty of the State of Maryland, April 30, 1891.

school of his native town, after eleven years of study, may it not have been this experience (?) which was the foundation of an influence dominant for thirteen hundred years after his death?

A certain Herodicus was "so famous for his application of gymnastics to the improvement of health that Plato accused him of doing an ill service to the state by keeping alive people who ought to die, because, being valetudinarians, they cost more than they were worth to the community."

"Physical culture in theory is the obtaining and maintaining of a properly-formed, healthy body; in practice, *right conduct about food, (clothing), activity and rest.*" On this broad platform, hereafter, the specialist in health may minister to the great masses, and especially to the growing youth in homes, schools and colleges, as a sort of Medical-Extension Corps, and so educate the public and themselves in the great, basic facts of living—casualties aside—free from ordinary sickness, and dying at the call of that honorable (but infrequent) messenger of death, Old Age. "This world is not yet prepared, so far as we know," says a writer, "for the activities of bodiless spirits. The first thing is to develop a firm, healthy body, strong muscle, pure blood, a clean, mucous membrane—such conditions would base a soul upright and free." Hope, sunshine and fresh air have never been supplanted as tonics; and along with diet and medication, regulated exercise, and its correlative, rest, calls for the same therapeutic respect in the prescriptions of the careful practitioner. Joining a gymnasium or an athletic association, *per se*, as remedial measures for the sedentary, weak or semi-invalid, is a species of polypharmacy—the administration of a crude drug in place of the purified and isolated extract—active (athletic) principle, if you please. Of exercise, as of dieting, it may be said, *mutatis mutandis*, in the language of the famous Code of Salernum:

"Doctors should thus their patient's food revise:
What is it? *When* the meal, and what its *size*?
How often? *Where*? lest, by some sad mistake,
 Ill-sorted things should meet and trouble make."

Believing that, in the Swedish Educational Gymnastics, this physiological refinement of bodily exercises has received the most attention, I have ventured, in the present paper, to bring to your notice, more especially, some of the distinguishing features of the same. In what follows, it is not my purpose to speak of Swedish medical gymnastics—an altogether distinct branch—but to refer to educational exercises simply. It has been well charged against the usual athletic work of schools and colleges that it does not reach the very class most in need of bodily development, viz., the more studious and sedate element, who have no desire to pursue sport as an end in itself, such as winning a prize or breaking a record or being known as an athlete. The worship of muscle appertains rather to the prize-ring, and exhibitions of strength and prowess introduce, with quite a doubtful advantage, the claims of physical training in a university course. We want in America to-day a sensible enthusiasm or ambition for good health by rational living! Sir James Paget says: "I should like to see a personal ambition for renown in health as keen as that for bravery or for beauty, or for success in athletic games and field sports. I wish there was such an ambition for the most perfect national health as there is for national renown in war, or in art or commerce."

What, if physiological laws are as sacred as moral laws, in their own proper sphere, and mankind as truly bound to obey them? "Holy and healthy are synonymous terms," admits that arch-dyspeptic, Carlyle, who thus philosophizes: "The healthy know not of their health, but only the sick. The true Peptician was that countryman who said, 'for his part, he had no system.' A state of health is denoted by a term expressing unity—when we feel ourselves as we wish to be we say we are *whole*. Had Adam remained in Paradise there had been no anatomy and no metaphysics." So much for infraction of known laws in the physical decalogue.

Let me call the attention of those interested in the Swedish idea of physical education to a treatise entitled "The Gymnastic Progression," by Claes J. Enebuske, Ph.D., of the Boston Normal School of Gymnastics, to whom the

writer is indebted for his practical instruction in the system. I cannot do my theme better service than to quote the following analysis, as he gives it:

"The functions of the heart and lungs are the fundamental functions of the body. It is the aim of Swedish educational gymnastics to develop these fundamental functions, and it endeavors to attain this end by a series of movements of the voluntary system, which shall be so arranged and executed as to bring about a healthy response between the muscles and the will. It does not strive to develop physical specialists, but only to train the different organs of the body in a manner that may serve the great double purpose of promoting the efficiency of the circulatory and respiratory functions, and of increasing the volitional control of the whole body. Throughout the entire course, the Swedish system of gymnastics proceeds upon the well-grounded theory that muscular strength must follow as the necessary consequence of a training so carried on as to promote the health and strength of these fundamental functions. Theory and experience show that a system of training may be followed which, while it develops muscular strength to a considerable degree, at the same time causes dilatation of the heart and lung-cells, consequently making their walls thinner and weaker. Upon such a training, common sense stamps the seal of disapproval. Get the heart and the lungs right, and the muscles will meet every reasonable demand. This is the teaching of experience. . . . 'The gymnastic days' order' is composed of a certain number of movements succeeding each other in a well-defined order, calculated to produce certain effects in a certain succession, all these movements together being designed to bring about a distinct hygienic and educational result. Students and brain-workers generally, from the conditions of their life, present a more or less temporary passive congestion, or tendency to such congestion, of the brain and abdominal organs, decreased respiration and the mind tired from prolonged concentration. The first object of the gymnastic drill must be to counteract these evils, to

relieve the brain and oppressed organs, to reinstate a healthy respiration and circulation, to tone up the body generally.

"First, '*order movements*' call attention to that fundamental position and carriage best suited to the physiological interests of the body, from which all correct gymnastics start, and to which they return before a relaxed position of rest is resumed. Then a class called '*leg-movements*' intended to draw the blood in large quantities down towards the lower extremities, thereby relieving the brain and the oppressed organs. These also stimulate the general circulation. Next follow movements called '*strain-bending movements*' and '*heave movements*,' which expand the chest and induce deeper and more energetic respiration. The combined result of these four typical gymnastic movements in the order mentioned is this: More and better oxygenated blood is carried to the muscles, and the venous drainage correspondingly facilitated; the mind is relieved from its previous strain and the will is concentrated upon the muscular response. These results unite to form a most favorable general foundation upon which to ground the following more specific movements: '*Balance movements*, which bring about a co-ordination of muscular contraction in all parts of the body, and by demanding equilibrium in difficult positions, train the sense of upright and graceful posture.

" '*Movements for the back*,' which correct the shoulder-blades and back, and, by equalizing the strength of the muscles on both sides of the vertebral column, counteract faulty growth of the spine; *movements for abdomen and forepart of the body*, which stimulate the abdominal organs by an alternating increase and decrease of the abdominal pressure. The movements strengthen the muscles of the abdominal walls, as do also the next following, called the '*alternate side movements*.' These last train the legitimate mobility of the ribs and vertebræ, and mechanically stimulate the spinal nerves. These movements are performed with gradually increasing force, compelling stronger and stronger action from the circulatory and respiratory organs, but never exceeding a certain point, the *optimum*, the test

of which is a deep, free, undisturbed respiration during the movement. Whenever the extreme limit is approached, as shown by breathlessness and uncomfortable heart action, the effects are immediately moderated by administering movements that quiet and normalize respiration and heart-action. By these movements the system is prepared for the next following. These are the more vigorous exercises of running and jumping, which culminate the day's order, after which the accelerated action of the heart must be normalized and the body prepared for rest. This is accomplished by slow, measured '*leg movements*,' accompanied by deep, rhythmic breathing movements."

The above lengthy quotation must suffice, by way of description, to show that the Swedes have wrought out a truly scientific system, simplified and classified all the possible beneficial movements of the body through its different members, and presented a rational, practical and economical plan of bodily education; a basis on which our American method will yet be founded. "The exercises, not the apparatus, constitute the system, and the movements can be taken anywhere where there is sufficient floor space to stand on and sufficient oxygen in the air," with the adaptation, at times, of ordinary chairs and desks, or other furniture.

It is known to many that the Swedish system is now being introduced into the public schools of Boston, under the supervision of Dr. Hartwell, assisted by Mr. Nissen, and a demand for teachers has now come to one school from fifteen New England towns. There are also applications from Kentucky—a college and private school—and also from California, Virginia, and the middle West. Atlanta has promptly entered the field in her public school course. Baltimore is peculiarly fortunate in the excellent opportunities offered for scientific and bodily training at the Woman's College and the Bryn Mawr School for Girls. The Normal School has also its drill of part Swedish and part Delsarte exercises, and all these institutions are doing commendable work of great promise to the young women of our community. Thus, gradually, is the conspiracy against

girlhood being broken. To the dress-reform movement of the day a meed of tribute is also justly due, for at the basis of all the physical possibilities of the sex lies a rational, unfettered costume. "In spite of the abuse in the use of clothing to which most women have subjected themselves for centuries," says Dr. Sargent, "I am glad to be able to state that the typical woman, as shown by several thousand measurements in my possession, is not quite so ugly in her lines and contour as the dress she often wears would lead one to infer." If, among other fallacies which are constantly being exploded as to what women can and cannot do, in both the physical and mental realm, should be added the belief that her attractiveness is in any way enhanced, or her comfort and elegance maintained, by wearing the inane, inartistic and often indelicate corset, then the gymnasium will readily have accomplished a feat hitherto denied to the most vigorous philippics of the medical profession.

Thinking it would be of interest to some to know how women have taken up this new occupation, and with what success they are meeting as teachers, I have obtained the following data relative to the Normal School with which I am most familiar, for there are now five leading schools for physical education in the country:

"Whole number of pupils (men, women and children) for 1890 and '91, 465, of whom 401 were women and children; whole number of normal pupils, 39, the standard requiring the rejection of 27, chiefly on account of insufficient mental training, though several were physically incompetent. The *personnel* of the class includes three full graduates of Smith and Wellesley Colleges and Boston University; also fourteen Normal School graduates, while no one is received who has not the equivalent of a full high-school training and is free from any organic disease or serious functional disorder. The course, lasting generally two years, includes the instruction given during the first year of a graded medical school in Anatomy, Physiology, Hygiene, etc., and will be broadened by the subsequent addition of Anthropometry, Pedagogy, and studies in applied Physics and Chemistry.

About one-third of the class are taking medical gymnastics, not to become practitioners, but safer teachers of educational gymnastics." Graduates are now receiving from \$60 to \$100 a month for their services, and the demand is greater than the supply. Vassar, Smith, Wellesley and Mt. Holyoke Colleges have well-organized physical departments, working on scientific principles, with an educational and hygienic aim. None are, however, better equipped than the two of which our city may justly be proud.

At the last meeting of the American Association for the Advancement of Physical Education, held in Boston in April, Rev. Dr. Hyde, President of Bowdoin College, made the following excellent points in explaining the status of physical training, as he believes it should be in our American colleges:

"1. That exercise is best which reaches the largest number and does most for the weakest men.

"2. That exercise is best which makes the hardest work attractive.

"3. That exercise is best which most coördinates body, will and mind.

"Ninety per cent. of our students are not reached by athletics. The question is not, What can be done with the apparatus, but, What can the apparatus do for the young men."

He realizes practically that mind and body stand together in the closest correlation, and gives this branch of education its just *academic recognition*. "It is made one full study and is obligatory upon every man. To it is given one-thirteenth of the whole time devoted to the college course, and regular and faithful attendance is necessary for graduation. A carefully prepared athletic and scholarship table, giving the standing of 153 students, showed that excellent physical development is compatible with the highest mental development. Professional and mercantile classes especially need the physical education, systematic scientific training will give them. It trains the student to find pleasure in the right things; they become less noisy, better able to fix attention, and less boisterous in play and

fortified against animalism and sensualism. Amherst and Haverford are conducted on the same principle. The instructor in these institutions should be a medical man, and a college graduate by preference, so he may the better command respect; and he should rank as a full professor, and be paid accordingly."

Dr. Seaver, of Yale, in examining the Academic freshman class of the year, found, out of the 260 men "about thirty whom he termed in bad physical condition, about 75 in fair condition, fully 100 in good condition, and the remainder, about 55, are rated as first-rate in health. The latter class are men who have had athletic training before, mostly in the preparatory schools." Inasmuch as the critical periods of growth are passed during school life, how necessary does it seem that trained and qualified physical supervision should be added to the public school régime.

Jean Paul, in his quaint way, says, "each generation of children begins the history of the world anew. The school-house of the young soul does not merely consist of lecture and lesson rooms, but also of the school-ground, the sleeping-room, the eating-room, the play-ground, the staircase, and of every place. What intermixture of other influences always either to the advantage or prejudice of education! In revising a scheme of education, G—— had chosen that more attention should be paid to bodily health than to mental superfœtation; he thought the tree of knowledge should be grafted with the tree of life. Ah! whoever sacrifices health to wisdom has generally sacrificed wisdom too, and only *inborn*, not *acquired*, sickness is profitable to head and heart."

Dr. Seaver writes that "the child should come under the care of an experienced physical director from the day of entrance to regular school life. A physical examination should be made that should determine the condition of heart, lungs, spine, muscles, skin, eyes and ears. Many a case of incipient disease that eventuates in disaster would be discovered and put in the care of a physician, if necessary, or a correct regimen of diet, sleep, exercise, etc., inaugurated, with the aid of the parents, that would coun-

teract the tendency to disease or deformity and save the child as a useful member of society. Countries abroad, with far less financial resources than our own, such as Switzerland, Germany, Sweden, Denmark, France and Italy have long since taken such a step"—and there is a public school for girls in Massachusetts, where a somewhat similar examination prevails.

The *Sun*, in a recent editorial, called attention to the unsatisfactory results attending military instruction in colleges; and it is a very significant fact that Dr. Charles R. Greenleaf, Lieutenant-Colonel and Surgeon, U. S. A., was specially detailed by Secretary Proctor to attend the meeting in Boston and read a paper on Physical Training in the Regular Army, in which he spoke of the necessity of supplementing the drills and manual of arms by more complete and systematized gymnastic exercise. The outgrowth of his visit was the appointment of a committee to urge upon Congress the authorization of a professorship of physiology, hygiene and physical training at the U. S. Military Academy at West Point. Gymnasias have been erected at many outposts, and it is intended to use the revenue from the canteen fund for their support.

Dr. Wey's successful labors in effecting mental and moral progress through physical training of youthful criminals at the Elmira Reformatory is another most interesting phase of this movement. He believes that "the primary education of many criminals and defects should be the education of the body and the building up and strengthening of the brain. To force or develop a brain whose habitation is attenuated and architecturally inharmonious, whose nervous system is vitiated, is to produce a mental dyspeptic—to cram the mind with scholastic lore and moral platitudes in excess of its physical strength. First, let the scheme of training or reformation embrace the bringing to the highest attainable degree of perfection the physical man, and coincidentally the brain will participate in the work of physical improvement. . . . The work of physical education, to be successful, should be carried on along a three-fold line; muscular amplification and structural enlargement, not mere

increase in size but increase in structure, to arrest defects transmitted or acquired through environment or defective modes of living; the bath (Turkish), as a stimulus and means of bringing the various members of the body into greater harmony; and a dietary suitable to supply energy of the kind best adapted to the adjustment of mind to body."

I cherish the hope that physical training, which has thus risen to the dignity of preventive medicine, will prove a helpful resource in the development of the *feeble-minded* brain. Plato said to train the mind and neglect the body was to *produce* a cripple. More and more is it being appreciated that "mental development begins with and depends upon purely physiological processes. Dr. Seguin wanted a way into a dormant mind, and found it through "The Training of an Idiotic Hand." The occupations of the kindergarten represent a successful approach to this lethargic and unquickened realm. Permanency of result necessitates structural improvement. It is easier to act upon the centers from the periphery than upon the periphery from the centres [Seguin]. Physical training has proved itself in the case of youthful criminals and dullards "an end to cerebral activity and mental increase." Mental development and culture ignoring the fact of a physical basis soon resolves itself into a study of pathology and morbid anatomy [Wey]. The test of the "good and faithful servant" specifies the comforts and help accorded the *physical* man in distress; moralizing seems a better application afterwards.

There is abundant evidence that our disdainful brains are largely indebted to the muscles for their start in life, and that there is a distinct order in which the various motor centres develop through outside stimulus; and presumptive proof that these transmitted stimuli not only lead to increased central growth, but may affect continuous motor areas. The researches of Dr. Wilmarth, of Elwyn, Penn., on the microscopic, and other, conditions found in *feeble-minded* brains (a report of 100 cases), temper one's enthusiasm somewhat, but what else can you invoke in behalf of

these defective ones than aids to improved nutrition and circulation?

To such as have faith in physical methods, commends itself, in my judgment, a trial of the Swedish educational gymnastics, and I am glad to have the encouragement of Dr. Fort's institution, near Ellicott City, Md., where this system is now being introduced.

In conclusion, what of the influence of this awakening in bodily culture on the profession? Is it not an opportunity to insist more and more in our practice that "there is only one rational method of treating the sick, and that it consists in so relating the individual affected to the cause of his disease as to make him not only intelligent on the subject, but at the same time conscientious concerning it?"

The sanatoria of this country are doing an effective work in thus stimulating an enlightened public conscience. These were the first temples of Æsculapius, and are to-day renewing their youth under the best medical auspices.

The great question of the future is more and more tending to the prevention of disease. Hygiene and sanitation are opening the way. Brilliant as is the most recent discovery in bacteriology, its illustrious author would probably be the first to admit, in the words of another, that "exactly the kind of cases most likely to be benefited through its means have long since been known to be greatly improved and often cured by hygiene and dietetic treatment."

Let us invoke, first, the natural germicidal and anti-septic powers of healthy tissues and normal functions. A hopeful writer classed the tubercloses among the preventable diseases, and says, "fresh air and an abundance of it, the increased capacity of the chest, the disinfection of the products of disease thrown off by its victims, the inspection of animals and of meat, the application of sufficient heat to all foods—those are the agencies which will, eventually, lessen the ravages of the 'bacillus tuberculosis.'" Foods, habits and other incidents of life, being daily and constant, must exert a far greater influence on constitutional tendencies than medicine or treatment which are occasional and varying. The man who improves on food products, ventilation,

methods of exercise, etc., will thus confer the greatest benefit on the community.

The combination of science and popular experiment, represented by the work in Boston of Mr. Edward Atkinson's food laboratory and the New England Kitchen, is of the highest importance to every physician and practical philanthropist; for it does not seem likely that either will ever be independent of the problem of nutrition in their labors for the maintenance of health, the cure of disease, or the social and moral amelioration of the poor and afflicted.

"For the first time, it is believed that standard dishes, one of which is beef-broth for invalids, have been prepared on scientific principles with such exactness that they may be duplicated in every particular, like an apothecary's prescription."

If, with renewed investigations into sanitary chemistry, the future shall bring us those data on which an exact science can be based, and emphasis be laid on the sacredness of physiological laws and the duty of bodily training, then the importance of the physician to the State will be better realized and the era of preventive medicine more acceptably inaugurated.

A CASE OF TRAUMATIC EPILEPSY.

In the "Medical Record," March 28, 1891, J. E. Courtney, M.D., presents the following: A child, aged four months, fell a distance of fifteen feet striking on her head. The injury seems to have been an inversion of the bones forming the posterior fontanelle. No fits occurred until the age of five years, when she was struck on the head. At this period epigastric aura and petit mal appeared. There was indication of cerebral engorgements during the fits, the cerebro-spinal fluid being strongly forced out through the opening in the skull during the clonic stage, lightly distending the scalp and then gradually subsiding. At the age when hyperplasia of bone about the margin of the opening and complete ossification offered unyielding obstruction to further brain expansion, it was observed that the seizures came on with greater frequency and violence. At last she passed into status epilepticus, and died at the age of twenty-two.

A. F.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

*From the Swedish, Danish, Norwegian
and Finnish:*

FREDERICK PETERSON, M.D., New
York.

From the German:

WILLIAM M. LESZYNSKY, M.D., New
York.

BELLE MACDONALD, M.D., New York.

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:

JOHN WINTERS BRANNAN, M.D., New
York.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo,
N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport,
Mass.

*From the German, Italian, French and
Russian:*

F. H. PRITCHARD, M.D., Norwalk, O.

ALBERT PICK, M.D., Boston, Mass.

From the English and American:

A. FREEMAN, M.D., New York.

From the French and German:

W. F. ROBINSON, M.D., Albany.

ANATOMICAL.

HEMITROPIA LINGUÆ.

In the "Montreal Medical Journal," March, 1891, from the study of a case of this trouble, caused by inflammatory changes in a cervical gland near the angle of the jaw, Dr. H. S. Birkett draws the following deductions: The hypoglossal is the motor and trophic nerve of the tongue. The glosso-pharyngeal nerve is concerned in the function of taste. The branches of the pharyngeal plexus supply the mucous membrane of the naso and buccal pharynx with sensation. The motor nerve of the levator palati and azygos uvulæ muscles is probably the accessories. The superior ganglion of the cervical sympathetic contains, dilator nerve fibres to the iris of the same side; vaso-motor; sweat; and secretory nerve fibres to the mucous glands of the pharynx.

A. F.

PATHOLOGICAL.

A CASE OF HYSTERICAL AORTA.

In the "Medical Record," April 18, 1891, Sarah E. Post, M.D., reports the case of a woman, aged thirty-five years,

who suffered from gastric intolerance, spitting of mucus and blood, profound depression, suppressed menstruation, cachexia and a tumor in the epigastrium. The tumor could be followed from the ensiform cartilage to the umbilicus, and from there, for about an inch to the left. It was cylindrical and pulsated. At subsequent examinations it was apparently a rounded mass and limited to the epigastrium, and at another time it was found only at the umbilicus. Under improved alimentation it disappeared a week before death. Autopsy showed no gross disease of the abdominal organs and the aorta was of the ordinary calibre. Dr. Post surmises that in these cases a relaxation occurs in the walls of the aorta, similar to that found in the skin and subcutaneous tissue.

A. F.

THE GANGLION CELLS IN ACUTE MYELITIS.

Since the publication of Friedmann's article on "Degenerative Changes in the Ganglion Cells in Acute Myelitis," Dr. Karl Schaffer, at the Histological Laboratory of Budapest, has been making a number of microscopical studies on this class of cases. The joint conclusions of these two observers were as follows: (1) The pathological alteration of the ganglion cells was found to begin in a limited portion of the cell structure; if in the centre (homogeneous swelling), the periphery remained normal in appearance; if on the margin of the protoplasm (sclerosis) the centre of the cell was usually found intact. (2) The greatest resistance to the pathological process was found to be in the nucleus, and more particularly in the nucleolus, the tendency of affections of the nerve cells being to attack the periphery first, and then through a centripetal course the nucleus and nucleolus. (3) From the above results, the so-called partial degeneration of the nerve cells was found to be the physiological consequence of a diminished functional capacity of the cell. (Neurologisches Centralblatt, April 15th.)

B. M.

MULTIPLE NEURITIS.

Dr. J. Pal, in an article on this subject, gives an exhaustive review of the etiology and pathology of this much-discussed disease. His final conclusions are based upon a careful research of all the data bearing upon the question and upon a rather large personal experience. It has been the author's endeavor in this paper to elucidate the following statements:

(1) That multiple neuritis is an independent affection of the peripheral nerves, not associated primarily with disease of the spinal cord. (2) That in the course of a multiple neuritis the central apparatus may become affected secondarily, through noxious material circulating in the blood. (3) That a connection may be established between the peripheral neuritis and the spinal centre through the various conducting paths. (4) That in the so-called neuritis of tuberculosis the symptoms of œdema and reduced faradic irritability are frequently absent.

The important question in the study of multiple neuritis has always been, What is its relation to the anatomical alteration in the spinal cord, which is usually found in these cases? The author thought that the hypothesis of Erb, that multiple neuritis was a secondary degeneration consequent upon disease of the ganglion cells of the anterior horns, was not proven. A deduction from the author's observation leads to the conclusion that the fibres of the anterior roots are not in direct trophic relation with the ganglion cells of the anterior horns, as it is generally accepted. Those cases of multiple neuritis, in which autopsy was performed, microscopical examination of sections of the cord revealed degenerative changes in the posterior columns, especially in Goll's column. Such alteration in the white substance was interesting from the probability of the possible relation of this disease to *tâbes dorsalis*. These changes have been previously described by other observers as being found in toxic diseases. Tuzek found after a most careful research that by far the most vulnerable portions of the cord were the posterior columns. Leyden and Oppenheim believed in the peripheral origin of *tâbes*. In one of the author's cases of polyneuritis there had been, besides various degenerative changes in the spinal cord, a *tâbes cervicalis*, these alterations being no doubt due to some toxic affection. It was further stated that not alone was the posterior column found diseased in some cases, but that any of them might become involved in degenerative processes, as such changes had been found in all the columns. The author thought it would appear from these facts that this condition of the nerve fibres did not indicate a systemic, but a localized disease. Further research has, however, led to the conviction that disease of the cord, in a case of polyneuritis, is undoubtedly brought about, as a secondary consequence of the disease of the peripheral nerves, through the conducting paths. These conditions of the cord are known to exist, but to accept them as orig-

inating from a spontaneous systemic toxic affection, is to pin oneself to a statement that has not as yet sufficient proof. In regard to the hyaline degeneration, these changes were found not due to multiple neuritis, but secondary to blood changes. In conclusion the author stated that from his experience the present classified symptoms of latent neuritis were misleading. He had in several cases of tuberculosis, where no œdema had been present, made examination of the nerves of the feet and found them degenerated. Two of these cases were interesting from the fact that in the course of the tuberculosis there had been no evidence of neuritis present, when œdema in the ankle joint appeared, followed the next day by peroneal paresis. Post-mortem examination of the nerves showed parenchymatous degenerative changes in the cutaneous branches of the dorsum of the feet, and also in the peroneal trunks. Again the condition of so-called cachectic œdema was brought about by a degenerative disease, one which was likely to produce a corresponding disease in the nerves. As to the faradic irritability being diminished or lost, the author found it almost normal in two of his cases. (Wiener klin. Wochenschrift.) B. M.

HYSTERICAL FEVER.

Dr. Boulay, in the "Medical Journal of Lille," has recently given us an interesting *résumé* of this strange and, one might add, doubtful manifestation of functional nervous disease. Although the power of hysteria to simulate all kinds of organic affections is well known, it might be supposed that this similarity must stop at such a symptom as fever, and yet the number of well-authenticated cases already on record makes it impossible to deny that this form of fever does actually exist, apart from any organic lesion whatsoever.

It should be stated that by fever is meant simply the elevation of temperature, the quickness of the pulse and the dyspnœa; the other symptoms, as the disturbances of the nervous system, the digestion, etc., being due, not to the fever, but to specific infection which is causing the disease.

It has been objected, that there are numerous causes of error which may account for the supposed fever in these cases. Thus a local vaso-motor disturbance might produce a local rise of temperature without any general febrile condition being present, or the patient herself might succeed in making the thermometer read higher than it should, in

order to attract attention to her case. A case is recorded in which the patient managed to do this by repeatedly tapping the bulb of the instrument with her finger.

Cases of this sort are rare, however, and after they have all been eliminated, there are enough left to demonstrate the existence of this nervous affection.

Its history is vague and confused, since it was acknowledged to exist by a certain number of authors, and denied by others. It was described by Sandras in the latter part of the last century as essential fever; a little later by Pomme as spasmodic fever, while the celebrated Broussais and his school denied its existence *in toto*.

Of late years a number of well-authenticated observations seem to have rendered this subject worthy of study.

The etiology presents nothing of special interest, since the causes are the same as those of hysteria. The principal ones are what Charcot calls moral traumatisms, such as mental shocks, sorrows, etc. Convulsive hysterical seizures and convalescence from acute diseases are also named as frequent causes of this form of fever. Some authors have endeavored to classify this form of fever, which seems rather absurd in view of the small number of cases observed and yet a simple classification into two divisions may be made with advantage; namely, cases of fever occurring alone and uncomplicated, and cases in which the fever is accompanied by other hysterical symptoms, or, in other words, hysteria with fever.

A typical case of the first class is reported by Prof. Debove. It was a woman, twenty-five years of age, who had always been hysterical from her childhood. Her temperature remained above the normal for over three years, sometimes going as high as $105\frac{1}{2}^{\circ}$. At the commencement, her trouble seemed to be intermittent fever, but this hypothesis soon proved to be wrong, as the course of the fever was entirely irregular.

During the whole of these three years, there was no indication whatever of organic affection, nor did the patient lose flesh or become weak. At the end of the time she suddenly recovered, almost without convalescence.

The principal characteristic of this form of fever is its extreme irregularity, no two tracings being alike. Its course is sometimes steady with evening exacerbations, and at other times it will show itself remittent or intermittent.

Sometimes there will be almost no concomitant symptoms, and the tongue will be moist as in health; then again there will be the regular febrile condition, with coated tongue, general malaise, headache, etc.

A remarkable characteristic, also, is the lack of emaciation, which has been noticed by a number of authors besides Dr. Debove. As might be supposed from the foregoing facts, this form of fever is not followed by serious consequences. Hysterical manifestations marking the true nature of the fever are sure to appear sooner or later, generally in the form of convulsions.

The second group of Dr. Boulay's classification is that in which there is apparently an affection of some organ. The fever may simulate typhoid fever, pneumonia, meningitis, peritonitis or intermittent fever.

A woman, twenty-two years of age, after receiving a sudden fright, was taken with a chill and then lost consciousness. She was taken to the hospital, where she presented all the symptoms of typhoid fever; temperature nearly 104° , dry tongue, diarrhœa, stupor, etc. Three days later the fever had entirely disappeared, and with it all the dangerous symptoms. It was then found that she was suffering from right hemianæsthesia, anæsthesia of the pharynx, clonus hystericus, and other well-marked symptoms of hysteria. Three weeks later paraplegia appeared, with contractures of both legs.

The similarity of these cases to consumption is often most perplexing to the diagnostician. Thus, a case reported from a German journal, of a young woman, of nervous temperament who had a temperature of 111° , accompanied with abundant hæmoptysis, repeated attacks of dyspnœa and sharp pains in the left side of the chest, and yet no pulmonary lesion whatever could be found. In order to be sure that there was no error, the doctor placed one thermometer in the rectum, which read 111° , and another under the arm, which indicated less than one degree lower. Twelve days after this the temperature suddenly fell to normal, and a few days later all the symptoms disappeared.

There is hardly a physician who has not seen cases of hysteria in which the abdominal symptoms were so similar to those of peritonitis that it was hard to avoid being misled. One sign is generally absent—that of fever; but unfortunately the rule has exceptions, as the following case shows: The patient, who had previously suffered with paraplegia, ovarian tenderness, etc., was taken with all the symptoms of parametritis along with a rise of temperature. A year later she was seized with a similar attack, which lasted several months, the temperature remaining in the neighborhood of 103° . An examination was finally made under ether, and as no trace of abscess or exudate could be

found, the patient was told that she had no abdominal lesion whatever, and that she could get up and walk. The temperature immediately fell to normal, and the patient left her bed for the first time in two months.

Dr. Boulay gives a number of other cases illustrating this curious affection, whose reproduction here is prevented by lack of space. Enough have been given, however, to show that the subject is not without a certain importance, and that the fact of its existence should be always borne in mind when treating cases where the element of hysteria is known or suspected to be present. W. F. R.

CONSTITUTIONAL CONDITIONS COMBINED WITH AMETROPIA THE CAUSE OF ASTHENOPIA.

In the "New York Medical Journal," March, 28, 1891, Dr. D. B. St. John Roosa says that the general nervous condition, especially the nutrition of the nervous system, will have much to do in determining the causes of asthenopia, even in cases with considerable errors of refraction. The asthenopia following typhoid fever, which disappears without treatment, is an example of this. In what is comparatively a fixed condition, that is a decided deviation from the ordinary standard in the eyeball, is a most probable local source of asthenopia. Muscular insufficiencies result from these deviations, as is illustrated in strabismus. The standard of emmetropia laid down by writers from 1850 to 1875 is incorrect, and since then it has been demonstrated that ametropia exists in 90 per cent. of the human race. Neurotic patients will submit to any treatment year after year, in vain hope of achieving what is impossible for some individuals. An admission of this and less ambitious hopes for the cure of neuroses will prevent the profession from making statements that only bring our scientific name into disrepute. In the same journal, Dr. A. L. Ranney, says that clinical evidence goes to show that a large proportion of subjects affected with persistent insomnia of long standing suffer from some congenital defect of the eyes themselves, or from an improper adjustment of the muscles that move the eyes. He then endeavors to sustain this proposition by a report of cases that have come under his observation. A. F.

ANTHRAX AS A CAUSE OF PSYCHOSIS.

In a research of the literature on this subject no description of a case where a local infectious disease had caused a loss of mind could be found, Pulawski, "Internat. klin. Rundschau," however, describes a case of a man, sixty-two years of age, suffering from anthrax in the neck. The patient had been in a state of dementia for two months previous to being seen by the author, the condition dating from inoculation with the anthrax bacillus. It was supposed that the patient was suffering from dementia senilis. After an incision into the tumor the patient gradually recovered his mental faculties, and was at the date of the present writing perfectly sane. (Centralbl. für klin. Med. No. 20.) B. M.

THE STATUS EPILEPTICUS.

"Virginia Medical Monthly," April, 1891. In a case of this kind, Dr. Robert T. Edes, observed that the percentage and probably the total daily amount of urea excreted was greatly increased, reaching at one time 61 grammes per litre. The total amount of urea could not be determined with accuracy, since the urine was discharged in bed, but it was not extremely scanty; and supposing only a litre was passed, we should have the singular phenomenon of a person eating practically nothing, nitrogenous or otherwise, passing half as much again urea (or more) as a man on a full meat diet; and this, too, after the cessation of the convulsions. This excessive destruction of nitrogenous tissue appears to be in harmony with the high temperature and excessive action of the heart and respiration in the case observed. A. F.

APHASIA.

"New York Medical Journal," March 7, 1891, E. W. Holmes, M.D.: Visual sensory aphasia is found to coincide with lesions of the occipital lobe and angular gyrus. Auditory sensory aphasia, with the posterior part of the first temporal and supramarginal of the left side. Motor agraphia is associated with disease of posterior part of second frontal, and motor aphasia with third left frontal and island of Reil. Paraphasia and paragraphia possibly have some relation to fibres passing deeper, which join the temporal and occipital to the frontal lobes. A. F.

CLINICAL.

A CASE OF ABSCESS IN RIGHT FRONTAL LOBE
OF BRAIN.

In the "Medical Chronicle," March, 1891, R. T. Williamson, M.D., M.R.C.P., reports the case of a man who while in poor health was attacked with influenza, followed by severe frontal and occipital headache. His mental condition became very dull, the frontal headache continued, and after three weeks he was admitted to the Manchester Royal Infirmary. It was observed at one time that the patient could not be made to look to the left, the eyeballs remaining directed straight forward, but the next day this symptom had disappeared. There was absence of knee jerks, and examination also revealed optic neuritis in right eye. The temperature ran an irregular course, but rose in four days from normal to 106.4° F., when he died comatose, about seven weeks after the attack of influenza. The autopsy revealed a large abscess in the anterior part of right frontal lobe, and a small amount of pus was found in the upper ethmoidal sinuses on the right side. Dr. Williamson believes that the influenza gave rise to suppuration in the right ethmoidal sinuses, and that this caused the cerebral abscess. The limitation of the optic neuritis to the right side, the mental condition, and the absence of knee jerks he considers are interesting points. With regard to the patient's inability to look to the side opposite to the lesion (which Ferrier has described as occurring after extirpation of the frontal region in animals), Dr. Williamson is inclined to consider was due to the patient's dull mental state.

A. F.

MORVAN'S DISEASE.

In the "Journal of the American Medical Association," March 7, 1891, A. Church, M.D., publishes the record of a case, characterized by analgesia in the hands, dystrophy of the wrist joints, and the loss of fingers by whitlows, which symptoms he considers all point to the diagnosis of Morvan's disease. But as there is also present retention of the tactile sense, with marked blunting of painful and thermic impressions, which are regarded as pathognomonic signs of syringomyelia, he therefore believes this to be a mixed case.

A. F.

CEREBELLAR TUMOR.

In the "Boston Med. and Surg. Journal," April 30, 1891, Drs. W. N. Bullard and E. H. Bradford report the case of a girl, six and a half years old, who for a year had been subject to attacks of dizziness followed by vomiting. Subsequently she suffered from the following symptoms: Pains in the back, head, ears and throat, unsteady and staggering gait, ataxia and paresis of upper and lower extremities, incontinence of urine, increase of knee jerk and ankle clonus on both sides, and almost total blindness. The operation for cerebellar tumor was begun, but death took place from hæmorrhage through an anomalous opening in the occipital bone. A portion of the tumor removed showed the usual appearance found in large tubercles of the brain. No autopsy was permitted. A. F.

A PECULIAR FORM OF ALEXIA.

In the "Zeitsch. f. klin. Med.," Bd. xviii., Hft. 1 u 2, W. Leube reports the following case: A woman, fifty-four years of age, always healthy, began two and a half years ago to have pain first in the right leg and later in the arm, followed by stiffness and weakness. One year later headache, and within last six months speech disturbance and difficulty in swallowing. She was very forgetful and easily excited. There was slight rectal and vesical incontinence. Complete motor paralysis, without atrophy of the right upper and lower extremities. Disturbance of tactile sensibility and muscular sense, and diminution of temperature and pain senses affected the left side also. Sensation and motion normal in the region of the face. Right patellar reflex decidedly stronger than the left. Electrical reactions normal. Choked disk, right. Inflammation of the optic sheath, left. Now and then attacks of fever. The *diagnosis* was, circumscribed abscess in the left hemisphere in the region of the central gyri, presumably syphilitic. The treatment consisted of mercurial inunction, which resulted in considerable improvement in the motility of the right arm, and the disappearance of the aphasia.

This speech disturbance, at one time well marked, presented the picture of "subcortical motor aphasia" (Wernicke). The understanding of words and the control of speech were preserved. The capacity for repeating the words of others, spontaneous speech and reading aloud were considerably interfered with. It was impossible to examine in re-

gard to the writing faculty. It was remarkable that after the return of speech, decided alexia was developed. While the patient can pronounce short words correctly, she is unable to read long words, although she knows perfectly every letter and the meaning of the word. Upon being shown the corresponding object, she declares that it is the same which was given her to read, and gives it the correct name. As soon as the slate is turned upon which the word is written that she is unable to read, she pronounces the word readily and correctly. As she can read short words, consequently the tracts concerned in this process must be free, and as the patient is unable to pronounce certain words only while the eyes are directed upon the letters, the cause of the alexia in this case must be due to the impossibility to combine the several letters in order to form a single word. She forgets so rapidly the letters which she has correctly recognized, that at the end of the word she does not remember its beginning. The writer thus describes this phenomenon: We learn to speak in entire words, to read by spelling. Thereby a certain independence arises between the "speech picture" and the "letter picture." It is possible that, the speech tract being intact, the "sound picture" and the "speech picture" as well as the meaning of the word is completely and correctly excited during the spelling, and that, accordingly, also, the "sound picture" corresponding to the written word could be properly pronounced, but disappears from consciousness during the combination of the letters in reading. Reading by means of spelling is not successful, because the "letter-word-picture," to be artificially obtained, is effaced during its formation in its first parts before it is completed. On the other hand, it may be possible in certain cases, *i.e.*, when the objects and ideas are not unfamiliar, to pronounce the word, provided the patient's eyes are directed away from the word to be spelled. This case confirms the author in his agreement with the view recently advocated by Grashey, that under all circumstances we read by spelling. (Centrbl. f. klin. Med., No. 15, 1891.) W. M. L.

THE ANAL-REFLEX.

In the "Neurologisches Centralblatt," May 1, 1891, Dr. Rossolimo expresses his views as to the physiology and clinical significance of the "anal-reflex." He succeeded in obtaining the reflex in all normal individuals. Every touch upon the skin or mucous membrane of the anus was followed

by a contraction of the sphincter ani. Upon anatomical grounds, he assumes that the centre for the "anal-reflex" is to be found in the region of the third or fourth sacral roots. In further elucidation of this reflex mechanism, he performed a series of experiments upon dogs, in whom this reflex is as well pronounced as in man. A number of consecutive transverse sections were made through the cord, from the head to the tail, which enabled him to demonstrate that after section above the middle of the lumbar enlargement the reflex became exaggerated, but was suddenly abolished when a section was made corresponding with the third sacral root. He therefore concluded that the centre for the "anal-reflex" in dogs exists in that segment of the cord which corresponds with the third sacral root. In another series of experiments he exposed the lumbar enlargement and divided the posterior root pairs entering at this point. The reflex was tested after the section of each pair, and it was discovered that it did not disappear until both fourth sacral roots were cut. As a result of these observations, he believes that the "anal-reflex arc" consists of the fourth sacral pairs and the centres, which are found in the cord somewhat above the beginning of the fourth sacral roots, but apparently at the third root.

His method in obtaining the "anal-reflex" is as follows: For excitation of the skin and mucous membrane, any thin, firm object may be used, such as the head of a pin, a feather or a piece of rolled paper.

The patient may be in a standing or recumbent position. In the former, his body is to be bent forward, and he is directed to separate the buttocks with his hands. In the latter, he lies upon the side with strongly flexed hips. The reflex is manifested in the form of a distinct contraction of the external sphincter. When more pronounced, it is accompanied by drawing inward of the anus, and occasionally by contraction of the gluteal muscles. In women this test may be made in conjunction with the gynecological examination.

He formulates the following conclusions:

I. Exaggeration of the "anal-reflex" is observed—

- (a) In neurasthenics with increase of all skin reflexes.
- (b) In transverse myelitis affecting the upper part of the cord.
- (c) In organic diseases of the nervous system with exaggerated sensibility.

II. The decrease and abolition of the "anal-reflex" is observed.

(a) In multiple neuritis with extension of the process to the sacral plexus.

(b) In such cases of *tâbes* where the pelvic viscera are affected and where there is a more or less pronounced anæsthesia in the anal region.

(c) In myelitis of the lower portion of the lumbar enlargement with anæsthesia of the rectum, anus and urethra.

III. The reflex remains normal in functional neurosis of micturition, defecation and sexual capacity. W. M. L.

THE SURGICAL TREATMENT OF CHRONIC HYDROCEPHALUS.

The case reported by Pott (*Jahrbuch für Kinderheilk.* Bd. xxxi., Hft. 1 u 2) is that of a female child, being the second hydrocephalic infant born of the same parents. At the age of four weeks it came under the writer's care. Painting with iodoform collodion and puncture (evacuation of 300 c.cm. of fluid) were without permanent result. Forty-eight hours after puncture the skull returned to its former size. The writer therefore decided upon incision and the introduction of a drainage-tube. An incision $1\frac{1}{2}$ ctm. in length was made in the lower third of the frontal suture, close to the border of the right frontal bone. A pointed bistoury was inserted obliquely outward and downward, and the incision was enlarged to about $1\frac{1}{2}$ ctm. in length upward and downward, the blade of the knife always pointing toward the bone, and a small drainage-tube 8 ctm. long was introduced. A large quantity of fluid was evacuated. The wound was simply covered and the skull tightly compressed. After the operation, the patient rested well, but the spastic contracture of the joints persisted. After four days there was an abundant re-accumulation of fluid.

Within a few days the child's general condition was worse. The fluid flowing from the drainage-tube became very scanty, showing a layer of pus. Twelve days after the operation death took place during severe convulsions. The autopsy showed a rudimentary development of the brain and the existence of two vesicles without communication. One must certainly agree with the author when he recommends in suitable cases the radical operation of opening the skull. We may reasonably expect that, with careful antisepsis and further improvement in the technique, better results may be obtained. (*Centralbl. f. klin. Med.*, No. 8, 1891.) W. M. L.

THE CHRONIC SEQUENCES OF CEREBRAL HÆMORRHAGE.

In the "Virginia Medical Monthly," April, 1891, Dr. J. Leonard Corning, reports the case of a man, aged fifty-two years, who came under his observation two years after having a cerebral hæmorrhage. The left side was still paralyzed, but there was no history of aphasia. Evidences of contracture in the affected hand were first noticed after the paralysis had lasted four months. In three weeks after the advent of rigidity, it was noticed that the healthy right arm and hand were thrown into a state of mild tremor whenever movements were attempted with the left hand. Soon after the appearance of the tremor in the healthy limb the left shoulder began to be stiff and painful, the joints of the fingers became swollen and sensitive, and in a short time the joints of the toes on the affected side were also implicated. The toe joints and those of the fingers of the healthy side became likewise acutely inflamed. This acute inflammatory condition in great measure disappeared, but a deformity of both hands remained, as well as profound derangement of the vaso-motor mechanism. Dr. Corning considers this unique case a good illustration of post-hemiplegic joint affections, and not the least of its interesting features is the extension of the inflammation to the joints of the healthy limbs.

A. F.

SPINAL SYPHILIS.

In the "Montreal Medical Journal," March, 1891, F. G. Finley, M.D., reports a case of syphilis, myelitis and hemiplegia in which the nervous symptoms came on at a very early date. Although it is unusual to find either myelitis or hemiplegia until after a lapse of several years, yet in this instance spinal symptoms supervened not more than eight months after chancre, and hemiplegia in about sixteen months.

A. F.

INTERMENINGEAL HEMORRHAGE IN THE NEWBORN.

In the "Wienerklin.Woch." 1890, No. 46, Kundrat speaks of the intermeningeal hemorrhages of the newborn as being isolated and primary, thus differing from all other intermeningeal hemorrhages that occur at a later period. Such hemorrhages occur in two forms. The more frequent is

hemorrhage into the pia mater. In the other form, which often occurs in combination with the first, there are hemorrhages between the dura and the arachnoid. They are often so large that they produce perceptible flattening of the hemisphere, and even cranial asymmetry. Such hemorrhages are found in children who are born asphyxiated, or in those who are born breathing, but in whom the respiration gradually ceases after a few hours or a few days. In the first case, the lung is found in a condition of atelectasis from the very beginning. In the second case, the lung has returned to its foetal condition of atelectasis. This condition is so characteristic that from the atelectasis existing in children who have breathed we may conclude with certainty that intermeningeal hemorrhage has taken place. This atelectasis is due to the pressure of the extravasation upon the brain.

These conditions are usually found in cases of spontaneous birth. They are of more frequent occurrence than has generally been assumed, but do not always end fatally. In regard to the origin of these hemorrhages, the writer holds the following views: The pressure arising during the passage of the head through the pelvis produces a displacement of the parietal bone, and in consequence a compression of the superior longitudinal sinus and its connecting veins, whereby a passive congestion of the convexity of the brain takes place, and, through the tension, a tearing of the veins. Such hemorrhages also occur at other points—for instance, over the cerebellum. They are of similar origin. Probably the very rare hemorrhage into the choroid plexus belongs to the same class. (Cent. f. klin. Med. No. 13, 1891.)

W. M. L.

THERAPEUTICAL.

RESECTION OF THE OPTIC NERVE.

"Medical and Surgical Reporter," February 7, 1891, L. Webster Fox, M.D., writes that if this operation as a substitute for enucleation can be performed with complete protection against sympathetic ophthalmia, it will be a boon to many unfortunates. It is performed as follows: An incision is made in the conjunctiva over the insertion of the external rectus, and two silk threads passed through the muscle near its tendinous insertion. The muscle is cut and drawn to the temple side, exposing the globe. The nerve

is brought forward with a hook and cut, the external muscle readjusted. Very little reaction follows, and the action of the muscle is complete. A. F.

HEADACHES OF CHILDHOOD.

"Medical Standard," May, 1891, M. J. Simon, M.D., divides these into the following groups: Headache of growth; from fatigue and mental overstrain; from digestive disorders; from different neuroses; from gouty and rheumatic diathesis; from anæmia and toxic causes; from nasal, naso-pharyngeal, ear and eye disorders and precedent to meningitis. Headaches of growth appear especially in the morning, occupy the frontal and superior vertical region, and are increased by motion. Tonics and rest form the treatment. For the headache in oncoming hysteria he considers hydrotherapy of advantage, but thinks that tonics, and especially iron, are useless. The bromides are inferior as anti-spasmodics to valerian, aconite, antipyrin or phenacetin. The headache of epilepsy is characterized by an abrupt attack accompanied by cerebral torpor. It is for some time an equivalent of the convulsion. The end of the attack results an abundant urination. Early treatment by bromide and belladonna is of the highest importance. Headaches of gouty or rheumatic origin are rare in childhood. They are often accompanied by decided congestive phenomena, and simulate very markedly meningitis. Urinalysis is an excellent diagnostic. A. F.

TREATMENT OF HEADACHES BY NITRO-GLYCERIN.

In the "Medical Age," March 25, 1891, Dr. Trusevich publishes his observations on this subject, the preparation used being a one-per-cent. alcoholic solution. In a very obstinate case, however, the ten-per-cent. solution was used, two drops being first given, and after an interval of two minutes, three more. As a rule, two or three one-drop, or two-drop doses of the one-per-cent. solution placed on the tongue at intervals of a few minutes arrested the headache. He concludes that all cases depending almost entirely on a vaso-constrictor neurosis are immediately curable by nitro-glycerin. A. F.

THE DIAGNOSIS AND TREATMENT OF EPILEPSY.

In the "Montreal Medical Journal," April, 1891, according to Dr. James Stewart, hysteroid and motor disorders more frequently and closely simulate epileptic convulsions than any other affection. Biting the tongue and passing urine involuntarily during a paroxysm indicate epilepsy to a certainty. Minor attacks followed by hysterical seizures are difficult to diagnose, but nearly always a history of such attacks without past epileptic hysterical outbreaks is obtainable. Loss of consciousness is not an essential part of the epileptic paroxysm. The paroxysm depends upon the instability of the nerve elements in the gray matter, which has as a consequence a proneness to discharge violently. This instability may be acquired by traumatism, and also alcoholism. In probably fifty per cent. of all epileptics there is a neurotic history. The treatment should be directed toward diminishing that instability before the disease is confirmed. The young epileptic should be removed from old surroundings, away from contact with those of the same nervous organization as himself. Bromide should be given after meals in the smallest quantity sufficient to break the habit. Where the fits occur only once in three or four months, it is better to withhold the bromides. The foundation treatment does not depend on drugs or mainly on diet, but consists essentially in training of ganglion cells and attention to all those general measures which conduce to the proper performance of function in every organ and tissue of the body. A. F.

HYPNOTISM.

In the "Boston Medical and Surgical Journal," April 9, 1891, Dr. Harold Williams states that in hypnotism we have a therapeutic agent which is injurious to the physician, the profession, the patient and the community. It accomplishes nothing which cannot be performed by other, safer and better understood therapeutic agents.

In writing on this subject in the "Boston Medical and Surgical Journal," March 19, 1891, Hamilton Osgood, M.D., says there are so many cases of illness which resist other methods of relief and yield easily to suggestion, that it was simply a wrong to deprive such cases of it. Because in a few scattered instances hypnotism has been followed by the natural effects of ignorance, or over-application of it, the

treatment is to be abandoned, is merely to say that because electricity, morphia, ether, hot vaginal injections, carbolic acid, and many other remedies in common use, have done harm, they also must be laid aside. This is illogical and lacking in common sense. A. F.

THE DANGERS OF SULFONAL.

Dr. Bresslauer, "Wiener med. Blätter," in making a thorough investigation with sulfonal in the treatment of neurosis says, that while in some cases it has been known to do good, yet the bad effects of the drug are so apt to come on and prove fatal when least expected, that he does not advise its use unless cautiously administered. When any one symptom came on which could be attributed to the remedy, it should be at once left off; even then it was too late in most cases to save the patients from heart failure, to which, as a rule they succumb. The symptoms caused by the toxic action of the drug were, first, constipation, then obstipation, following this scanty and dark colored urine, thirst, increased pulse, appearance on the legs of bluish spots similar to purpura, ataxia and numbness, a difference in the temperance of the upper and lower parts of the body, and finally heart failure. (Neurologisches Centralblatt, March 15.) B. M.

A NEW METHOD OF CATAPHORESIS.

In the "New York Medical Journal," April 25, 1891, W. J. Morton, M.D., describes what he calls "Anæmic Cataphoresis." By this method he causes the drug to act upon that part alone for which it is intended by cutting off the blood stream either by an Esmarch bandage or a rubber ring. Where the bandage or ring cannot be applied, he exercises compression with the narrow edge of a disk-shaped electrode, or simply by a ring of hard material held firmly against the skin and within whose circumference the cataphoric electrode is placed. The medicine is incorporated in a small plaster composed of pulverized gas carbon; a conducting material not capable of electrolysis. Cohesion into a plaster and adhesion to the skin are obtained by gelatin. Dr. Morton believes that to obtain the fullest results the drug used should be placed at *both* poles, and not alone at the positive one. A. F.

ATROPINE IN LOCALIZED MUSCULAR SPASM.

Dr. W. M. Leszynsky, in the "New York Medical Journal," March 14, 1891, reports a case of clonico-tonic spasm

affecting the platysma, and another of facial spasm, each successfully treated by the subcutaneous administration of atropine. He advises beginning with gr. $\frac{1}{16}$, the quantity being gradually increased from day to day until the desired effect is produced or tolerance established. The injection should be made directly into the substance of the muscle, where it is absorbed rather slowly, thus having ample opportunity to act locally upon the intra-muscular nerve elements.

A. F.

A CASE OF EPILEPSY CURED BY ANTIPYRINE.

W. R. Jack, M.B.C.M., in the "American Journal of Medical Sciences," May, 1891, reports the following: A boy, aged nine years, who suffered from an aggravated form of epilepsy, was treated by antipyrine gr. v. thrice daily, this amount being increased gr. i. in every dose each day. The fits were arrested when twenty-five grains a day were given, but reappeared when the dose was reduced to twenty grains, and finally ceased when twenty-five grains were again administered.

A. F.

PSYCHOLOGICAL.

MONOMANIA.

In the "Alabama Medical and Surgical Age," February, 1891, Henry M. Lyman, M.D., says monomaniacs are persons unsound in mind and body, and their insanity and unsoundness of mind is more especially conspicuous in one or more directions than in others. The term "paranoia" should be applied only to the congenitally defective, who are dominated by one or more systematized delusions, in such a way that their reasoning faculties remain in a large measure intact, and their general health unimpaired to any serious degree; the principal difficulty in their cases lying in the fact that they reason wrongly from certain data presented to their hampered minds. These cases rank themselves into subvarieties, as the genus paranoia, those with "grand delusions" or the delusions of melancholia, and those whose delusions take an erotic turn. All these delusions are characterized by remarkable consistency. The patient starts out with some dominating delusion, and as it proceeds it assumes definite shape and the actions that are based upon it are as consistent as those of a person of sound mind, so that they thus differ from the ordinary delusions of any other variety of insanity.

A. F.

Asylum Notes.

By MARGARET A. CLEAVES, M.D.

CIVIL SERVICE EXAMINATIONS FOR ASYLUM PHYSICIANS.

Examinations were held January 29th, March 5th and June 11th, 1891, at Albany, for the respective positions of Superintendents, First Assistant Physicians, Junior Assistant Physicians and Female Resident Physicians.

Of thirty-four candidates who presented themselves, twenty passed. Twenty-five of these candidates were men, of whom fifteen passed with ratings varying from seventy-six to ninety-six per cent. Nine were women, of whom seven passed with ratings varying from seventy to ninety-four per cent.

APPOINTMENTS IN NEW YORK STATE HOSPITALS.

From the eligible lists prepared as the result of the above examinations, the following appointments have been made:

On March 5, 1891, Dr. Samuel F. Mellen, of Sing Sing, N. Y., was appointed Junior Assistant Physician at the Willard State Hospital.

On April 25, 1891, Dr. Robert G. Cook, of Rochester, N. Y., was appointed Junior Assistant Physician to the St. Lawrence State Hospital, Ogdensburg.

FEMALE RESIDENT PHYSICIANS.

On April 23d, Dr. Clara Smith, of Syracuse, N. Y., was appointed to the State Hospital at Utica.

On April 27, 1891, Dr. Caroline S. Bristol, of West Sand Lake, N. Y., to the St. Lawrence State Hospital, Ogdensburg.

On July 1, 1891, Dr. Eveline P. Ballantine, of Le Roy, N. Y., to the Rochester State Hospital.

Under the new law governing the appointment of female resident physicians to the State hospitals for the insane, six appointments have been made. In addition to those just enumerated, Dr. Caroline I. Pease is at Poughkeepsie, Dr. Eleanor McAllister at Buffalo, and Dr. E. G. Irwin at Binghamton.

The first appointment of a woman as assistant physician in a hospital for the insane was made some twenty years ago.

An open competitive examination of candidates for junior assistant physicians in any of the State hospitals and asylums will be held at the rooms of the Civil Service Commission, Albany, N. Y., Thursday, August 20, 1891, commencing at 10 A.M.

Candidates must be citizens of the State of New York, at least twenty-one years of age, and have had at least one year's experience in a hospital or three years experience in the general practice of medicine.

STATE HOSPITAL FOR THE INSANE, MT. PLEASANT, IOWA.

This, the oldest hospital for the insane in the State of Iowa, having been in existence now thirty-four years, has been much enlarged and improved under the energetic management of the present superintendent, Dr. H. A. Silman. The capacity, eight hundred patients, is double that of ten years ago.

Recently completed and much-needed improvements are in the way of a cold storage, a new ice-house with a capacity of one thousand tons, a one hundred and fifty horse power engine, replacing the one in use for thirty years, and a new slaughter and packing house which is in process of construction. All these improvements tend directly to the material welfare of the household. But we can but feel that both superintendent and patients are to be especially congratulated upon the near completion of a new amusement hall, capable of seating five or six hundred patients, and the enlargement of the old chapel which heretofore has done duty as church, concert hall, theatre and ball-room, and which with a capacity of but two hundred, has for full fifteen years been entirely inadequate to the needs of the institution. The floor space has been enlarged and a circular gallery put in, so that it will now accommodate all who desire to

attend services. A fine new pipe organ has replaced the old cabinet.

The last report devotes considerable space, text and illustrations of microscopical sections to the work of Dr. Peck, the special pathologist. There are given the histories, *post-mortem* and microscopical examinations of cases of acute mania, acute delirious mania and chronic mania with differential cerebral lesions.

From the statistical tables we find that of the fifty-five cases of general paresis admitted from the beginning, twenty-four were admitted during the last biennial period, while of the four female cases, three were admitted during that period, showing a notable increase in this condition for an agricultural and Prohibition State without any large centres of population. Dr. Stroben has recently been appointed to the position of Dr. Straub, third assistant physician, who resigned a few months since for the purpose of pursuing his professional studies in Vienna.

EXAMINATION FOR ATTENDANTS ON THE INSANE.

The new regulation of the Medico-Psychological Association, England, for training, certification and registration of attendants on the insane may be considered as fairly in force now that the first examination is over. The next number of the official organ of that association will undoubtedly contain a report of examination results. A committee of the association have edited a "Handbook for Attendants on the Insane," which is used in conducting the examinations.

BUFFALO STATE HOSPITAL TRAINING-SCHOOL.

This hospital graduated its fifth class of nurses from its training-school on June 16, 1891. The class numbered fourteen—nine women and five men. The opening of a new and spacious ward in the hospital was celebrated the same day, the occasion being altogether one of much interest. Dr. J. B. Andrews is to be congratulated upon the meritorious results of his first decade as superintendent.

THE EXCRETION OF ACID IN MENTAL AND NERVOUS DISEASES.

At a recent meeting of the "Congress for Medicine" in Berlin, Hr. Lebusches, of Jena, gave an address on some clinical investigations concerning the excretion of acid in mental and nervous diseases.

The observations were made from two to three hours after food. In twelve cases of melancholia the condition was found to be normal in fifty per cent. In five cases of mania there was an increase of acid. In chronic paranoia the proportions were normal.

Fifty cases of paralysis were examined. In but two cases were the proportions normal, two showed no hydrochloric acid, five hyperacidity, and nine had too little. In most the quantity oscillated between absence and high proportions. As disease advanced, the acid reaction diminished and disappeared. Apoplectic and epileptic cases also showed diminution of acid. In chronic alcoholism the proportion was normal. In chronic morphinism, cases where morphia was withheld only examined, the quantity was diminished. The treatment of psychoses with opium had no effect on the secretion. In neurasthenia, quantity generally increased. Patients who were very much excited showed slight increase.

ASSOCIATION OF GERMAN ALIENISTS.

The following interesting programme is announced for the meeting of this body at Weimar, September 18 and 19, 1891: "Prophylaxis of Tuberculosis in Lunatic Asylums," "Responsibility and Criminality," "Drunkenness in Relation to Responsibility," "The Present Condition of the Aphasia Question," "Care of Epileptics" and "The Employment of Hypnosis in Lunatic Asylums."

THE GOOD MEN DO LIVES AFTER THEM.

Thirty-four years ago (1857) Moses Sheppard, of Baltimore, left \$560,000 in trust to establish an institution for the care and treatment of members of the Society of Friends who might become insane. This is the second largest bequest which has ever been given to found a private hospital for the insane.

As the interest only was to be used for the purchase of ground, erection of buildings and maintenance of the asylum, the work has of necessity been delayed. Out of the income the trustees have expended about \$880,000 in the purchase of three hundred and thirty-seven acres of land near Baltimore, and in the erection of three fireproof buildings, each three hundred and sixty-five feet long, from seventy-five to two hundred feet deep and from two to four stories high, fitted with the best modern improvements as to ventilation, heating, water supply, etc.

Despite these outlays, the original endowment has been increased and the interest of \$600,000 in well-invested securities will be used for the support of the asylum. The plan of the philanthropic founder, that this should be an experimental establishment, with all provisions for the most careful observation and study of individual cases will be rigidly adhered to. The Sheppard Asylum is to be congratulated upon the appointment of Dr. E. S. Brush, late of the Pennsylvania Hospital for the Insane (Kirkbride's), to the position of superintendent. Dr. Brush is an alumnus of the Buffalo Medical College, graduating in 1874.

As a specialist he is well known to the profession, and by training and experience is exceptionally well fitted for the work which he has to do. From the very nature of the institution, he will have abundant opportunity for the further development of knowledge in mental diseases and improved methods of treatment. Undoubtedly much work can and will be done that will have a widely extended and beneficial influence. The asylum will probably be ready for the reception of patients in the fall.

THE GENERAL HOSPITAL OF PHILADELPHIA AND ACUTE INSANITY.

The wards of the Philadelphia general hospital assigned for the reception of cases of insanity and alcoholism, and which have been used simply for the detention of such persons, pending arrangement for their transfer to the insane department, or to some other hospital for the insane, were a year since placed under the care of the chief resident physician, with the idea of securing immediate medical treatment the moment of their reception.

From the annual report of the chief resident physician, (Dr. D. E. Hughes) to the Department of Charities and Corrections, we glean the following: "The good results of

this plan is shown by the fact that fully fifty per cent. of the acute cases thus received during the six months the plan has been in operation, have been discharged cured or greatly improved. If in the future larger facilities can be given for this new departure, I am convinced that the now debatable question of the cure of acute insanity in general hospitals will be determined in the affirmative. The marked decrease in the admissions into our insane department during the last six months of the year, compared with the admissions the first six months, can be largely attributed to their early systematic treatment in the general hospital."

INSANE DEPARTMENT OF THE PHILADELPHIA GENERAL HOSPITAL.

A year since this department was placed under the medical control and management of the chief resident physician of the hospital. Naturally, the result has been found to be most satisfactory, as the general discipline is better handled when under the control of one head than with the authority divided between the members of the visiting staff.

At the close of the year the total population of the department was eight hundred and eighty, an increase of fifty-six over a year ago. In point of numbers, it is second of the hospitals for the insane of Pennsylvania. During the year a course of lectures was delivered to the nurses by the resident staff. These are being continued during the present year.

The most needed of all improvements for this department—a new building—is at last an accomplished fact. Moneys were appropriated by the councils to the amount of \$225,000 and set apart by the Board of Charities and Correction for new buildings for the insane department early in 1890 and work begun last November. The new extension comprises five separate structures, two ward buildings, bath buildings containing bath-rooms, closets, laundry, etc., centre building containing kitchen, to be used exclusively for this department, and dining-room building.

The buildings are heated by warm air driven to all points by powerful fans. For all rooms of the dining-room building as well as the ward buildings exhaust ventilation is provided, the system contemplating a change of air in all the buildings every twenty minutes without perceptible draught to patients. Every attention has been given to

have sanitary appliances of the best. Lifts are provided in both ward buildings for the use of invalids. Certainly the city of Philadelphia is generously atoning for her neglect of this department hitherto. With its new equipment, Blockley can easily take rank, as it should, with the State hospitals of Pennsylvania.

THE RICHARD GUNDRY HOME.

The widow of Dr. Richard Gundry, so many years in charge of asylums in Dayton, Athens and Columbus, Ohio; and who for the past twelve years, and until death in April last, was Superintendent of Maryland Hospital for the Insane, has opened a private home for nervous and mental diseases at Catonsville, Maryland. The home was ready for the reception of patients June 23d.

Dr. Richard F. Gundry, a son of the late Dr. Gundry and recently an assistant at the Athens State Hospital, Ohio, will be resident physician. His training and experience are all in the direction of the work to be done, and, says one who knew her, "with such a noble and humane woman in charge as Mrs. Gundry, it is needless to assure the profession that the patients intrusted to their keeping will receive the best of care. A woman of kinder heart or keener sympathy for the insane never lived than Mrs. Gundry, and with these qualities she combines the practical good sense of a mature and experienced matron of more than thirty years. Patients will receive not only good treatment, but the protection and sympathy of the most sensible and largest hearted asylum housewife with whom I have had the good fortune to meet."

THE BOARDING-OUT SYSTEM IN AUSTRALIA.

Vigorous efforts have been made by Dr. W. Beattie Smith of the Ararat Asylum, Victoria, to secure (under recent code of regulations) boarding-out places for suitable cases, where proper guardians could be had and easy supervision by asylum management maintained, as is done in connection with some of the Scotch asylums and to a limited extent in mass. The effort has not been wholly successful. There were received thirty-one applications for guardians, but to only fifteen of them were patients granted. The other sixteen were refused because of personal unsuitability, unsuitability of premises and the cool and calculating manner in which benefit of having patient was reckoned upon the basis of so much a meal.

Dr. Smith says that while he is not discouraged, he feels the fact is demonstrated that the boarding-out system, as carried on in Scotland, cannot be transplanted to Victoria. The amount offered, twelve shillings a week, is not a sufficient sum to induce the people of that country to take insane patients into their homes. It is only in the older countries where there is a class, as in Scotland, to whom the limited compensation is of vital moment, and where distances are so short that the hospitals can maintain an espionage over all, that this system is possible.

PENNSYLVANIA STATE LUNATIC HOSPITAL, HARRISBURG.

The policy of the State toward this hospital seems a short-sighted one. Although by virtue of years and construction the least well adapted of all the Pennsylvania State hospitals to its necessities, yet the State continues to treat it in a most niggardly manner. The district comprises sixteen counties of 10,468 square miles, and has a population of over 1,000,000, paying into the State treasury a large proportion of its revenue. Yet despite these facts we see by the last report that the three newer hospitals, Danville, Morristown and Warren, have received for land, buildings and furniture not less than a million of dollars apiece while the Harrisburg hospital, though many years older, has not received one-half that amount. This would be of little moment did not the absolute safety of the patients and the best interests of the institution demand appropriations for new buildings at once. Architects and builders, experts and non-experts, have condemned the old buildings for over a decade, and fifteen years ago the late Miss Dix said that, could the safety of the patients and household be assured, the best thing that could happen would be its total extinction by fire. It is unsafe, unsanitary, overcrowded, gloomy, inadequate and expensive. Defects of construction always increase the expense of maintenance, and undoubtedly this is the cause of the weekly per capita expense exceeding that of the other State hospitals, Dixmont excluded. The buildings at Harrisburg are without exception the poorest of a considerable number of insane hospitals, both in this country and in Europe, which it has been the writer's privilege to visit.

The burden of the reports of superintendent, trustees and lunacy committee for the past ten years has been the

need of new buildings. An appropriation of \$250,000 was asked for in the last report, with which to erect them on the plan of the hospital at Cane Hill, near London, but, so far as we are informed, was not granted. A small sum was appropriated a few years since with which two detached buildings were erected, and which can be incorporated in the proposed plan. We sincerely trust that it will not be long before definite and favorable action is taken in this matter.

POLITICS AND STATE HOSPITALS FOR THE INSANE.

It is nothing new to chronicle a complete change in the resident officers of an Ohio institution as a result of a change in the State politics. In comparing the last report of the Athens State Hospital with that of the preceding year, we find the name of but one resident officer in the former which appeared in the latter. Fortune in this instance favored an assistant physician whose political principles were democratic. The change of the party power in the State induced a change in the official roster of this hospital from superintendent to cook. The woman physician was asked to yield her place during the political campaign to a voter. There is no doubt much to be gained oftentimes by an infusion of new blood into asylum management, but the Ohio method is not to be approved of.

When an official staff is doing its work well, ably and harmoniously, there is nothing to be gained and much to be lost by so sweeping a change. No institution can undergo such a revolution in its organization without suffering therefrom. It was this factor in their asylum management which lost to the State of Ohio the valuable services of the late Dr. Gundry.

If appointments were made and held under civil service rules, removal being only for good and sufficient cause, and not because of political principles, the work of the officers of asylums for the insane would be much more satisfactory and the best interests of the patients correspondingly subserved.

Œsophagotomy was performed recently upon a patient in the Cork District Asylum for an obstruction in the throat and a stone weighing 630 grains removed. The patient subsequently died from exhaustion after an attack of

maniacal excitement. At the *post-mortem* examination eight stones were removed from the intestines, one an inch and a quarter in length and half an inch thick, and two rectangular stones almost as large, as well as smaller ones.

FARMING VS. INSANITY.

In the report of the superintendent of the Harrisburg hospital, the generally received opinion that farmers are particularly liable to insanity is combated. Thirteen of the last year's admissions were farmers and farm laborers. An exhaustive analysis of these cases shows heredity to have been a dominant factor in all, and, says Dr. Gerhard, "It would be unjust to blame the occupation as having been the cause of the insanity. They would have probably become insane no matter what their occupation, and they became insane not because of it, but in spite of it. Farming, although a laborious and often a monotonous occupation, is not one that is conducive to the production of insanity. It is one of the most independent and healthful occupations that can be chosen by any young man, and the boy who leaves the farm for the precarious living that he may pick up in town or city runs much greater risks in every way than if he would remain in the country."

FRACTURED RIBS IN THE INSANE.

It is popularly believed that the ribs of the insane are more brittle and therefore more easily fractured than those of persons in perfect health. Dr. J. Claye Shaw (St. Bartholomew's Hospital Report, xxvi., 1890) has investigated this point, determining the comparative strength of ribs in various forms of insanity by ascertaining the breaking weight of a rib fixed at one point and arranged to carry weights at the other.

From an examination of forty-one cases, he arrives at the following conclusions:

1. "That a considerable difference is found to exist not only in the weight of the ribs on the two sides of the body, but also in the average breaking weight."

2. "That the lighter rib is often found to bear the heavier weight, and that there is no proportion between the weight of the rib and the number of pounds it is capable of sustaining, whence it would appear that physical conditions of

structure have more to do with the strain-resisting power than has chemical change."

3. "That persons suffering from diseases of the heart or blood-vessels have less strain than others."

4. "That persons suffering from advanced constitutional disease, such as phthisis, may have ribs that support a strain above the average, and hence, that there is no direct relation between constitutional strength and that of the ribs."

5. "That when a blow causes a fracture, this is dependent not so much on the weight of the rib and the power of bearing strain as on other conditions."

6. "That though we have not had the opportunity of comparing the breaking weight of ribs here with those of patients dying in general hospitals, yet from the fact that many of the cases examined here died from diseases identical with the latter, and that the insanity in our cases was often more of a functional than an organic character, and that these patients were often in strong bodily health up to the time of their illness, it would seem that the dictum that the ribs of the insane are more brittle than those of the sane is true to a very limited extent only, and is almost confined to those affected with degeneration of the circulatory system."

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Original Articles.

CONSCIOUSNESS FROM A MEDICAL STAND-
POINT.

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THE practitioner is frequently called upon to determine the meaning of some modification of consciousness. He is best prepared to do this by the fullest possible understanding of all that pertains to this manifestation of animal life.

Knowledge of a purely psychological character may be of considerable use, but is altogether incomparable to a right understanding of the organic action, upon which the faculty hinges.

As a physiological function, it is now generally regarded as justifiable to locate its seat, its organ, in the cortex of the cerebrum. Some observers have thought themselves warranted in selecting certain distinct portions, as the cortical cells of the frontal lobe, while others believe it to be due to the action of all cells located on the convexity.

However desirable it may seem to be able to point to a particular group of cells, and designate it as the organ of

consciousness, any such abstraction would contribute but a small share of what must be regarded in viewing the physiological import of the function. It could avail us but little to know that the glands of the stomach produced a substance of a definite chemical composition, if we had no further knowledge of what could be effected by this fluid, what nervous and vascular relations are necessary to these glands while they perform their work and how such relations are maintained.

If then, we are able to say, in these cerebral cells consciousness is produced, but are ignorant of all associated organic action which enables them thus to act, our knowledge is of small practical use.

Let us, then, view consciousness as a product which, though imponderable like light, heat and electricity, nevertheless always represents a conversion of material elements. Let us look at it as a force, emanating from physical or chemical changes; and, while we forego speculation as to its intrinsic nature and await revelation in regard to the reaction on which its evolution depends, we may possibly usefully occupy ourselves by investigating some determining factors in its production, some of the physiological concomitants with its appearance.

In the investigation of any of the great functions of the body, the usual method is to determine: First, the purpose, and second, the means by which this is fulfilled. If the theme were digestion, we would recognize as purpose the introduction of nutriment into the blood, or to be more restrictive, the presentation of nutrient materials to organs, capable of conducting them into the blood. As means to this end we would examine into the work of all the organs engaged in the trituration, solution and chemical alteration of materials, and investigate the nature, source and mode of production of all the forces and materials engaged in the process.

Let us attempt a similar method with the functions under consideration. The purpose evidently is the recognition of relativity. The very knowledge of existence already implies the relations of time and space. The scope of such

recognition extends to what is of the recognizing individual—of the person—of the body—of self, and to what is extraneous or foreign and apart from self. I wish to be understood as not using any of the above terms or any hereafter occurring in this paper, strictly according to their significance or limitation in psychology. With the above broad statement of the *purpose* of consciousness, I will leave its further consideration with a studied intention of remaining as completely as possible without the domain of psychology and within that of physiology.

The consideration of the *means* leads at once to the search for the organ in which the function transpires. As already intimated, the cerebrum is very naturally selected as the portion of the nervous system to credit with this office. All conclusions to be drawn from the phenomena of health and disease, in man and the lower animals, as well as from experimental observation, are indeed confirmatory of this view. But to conclude that the cells of the cineritious cerebral matter have an intrinsic power of manifesting consciousness which is independent of all other parts, is as manifestly wrong as to conclude that the gastric glands can secrete pepsin when completely isolated from all their vital surroundings, even though we would assume the possibility of the gland cells in the one case and the nerve cells in the other, retaining their vitality. I may here take the privilege of quoting from Prof. McKendrick's article on Physiology in the *Encyclopædia Britannica*:

"The functions of the nervous system are so complicated and so closely related to each other, as to make it no easy matter to form a conception of the system, working as a whole. The progress of discovery naturally tends to differentiation, and probably to attach too much importance to one organ, as compared with the others, so that we are in danger of losing sight of the solidarity of the whole nervous system. Probably every nervous action, however minute or evanescent, affects, more or less, the entire system, and thus there may be an under-current of nervous action streaming into and out of the nerve-centres, along with a perpetual series of inter-actions in the centres themselves,

contributing to and accounting for the apparent continuity of conscious experience. No one now doubts that consciousness has an anatomical substratum, but the great problem of relation between the two is as far from solution as in the days when little or nothing was known of the physiology of the nervous system. Consciousness has been driven step by step upwards until now it takes refuge in a few thousand nerve-cells, in a portion of the gray matter of the cortex of the brain. The ancients believed that the body participated in the feelings of the mind, and that in a real sense the heart might be torn by contending emotions. As science advanced, consciousness took refuge in the brain, first in the medulla, and lastly in the cortex. But even supposing that we are ultimately able to understand all the phenomena—chemical, physical and physiological—of this intricate ganglionic mechanism, we shall be no nearer a solution of the problem of the connection between the objective and subjective aspects of the phenomena. It is no solution to resolve a statement of the phenomena into mental terms or expressions, and to be content with pure idealism; nor is it any better to resolve all the phenomena of mind into terms describing physical conditions, as in pure materialism. A philosophy recognizing both sets of phenomena, mutually adjusted and ever interacting, may be no explanation; but, at all events, it is unpretentious, recognizes facts and does not delude the mind by offering a solution which is no solution at all. But apart from the ultimate question is the important one whether physiologists are, on the whole, right in relegating sensation or consciousness entirely to the gray matter of the brain. The facts of comparative physiology are against such an exclusive notion, because we cannot deny consciousness to many animals having rudimentary nervous systems. . . . Research in anatomy and physiology, and the observation of disease, have driven physiologists to adopt the view that the brain is the organ of sensation. This is no doubt true in the sense that it ultimately receives all those nervous impressions that result in consciousness. But the parts transmitting the nervous impressions are, in another sense, as much

concerned in the production of nervous states as the brain. This view of the matter, put forward by Prof. John Cleland in 1870, has not received from physiologists the attention it deserves. His theory is 'that the consciousness attends from the special seat, so far as there is continuity of impressed condition; that, when an irritation is applied to a nerve extremity in a finger or elsewhere, the impression (or rather, impressed condition) travels, as is generally understood, but exists at least a moment along the whole length of the nerve, and that as soon as there is continuity of the impressed condition from finger to brain, the consciousness is in connexion with the nerve, and is directly aware of the irritation at the nerve extremity.'

"This view is quite consistent with all the facts of nervous physiology and presents fewer difficulties than the one generally held, which drives consciousness into the recesses of the nerve-cells in the cerebral hemisphere. It appears to keep clear of the prevailing error in the philosophy of modern physiology—that of regarding the body, and even the nervous system, as a vast series of almost independent organs, losing sight of the community of organs and interdependence of parts characteristic of the body of one of the higher animals."

We should, then, recognize as means in the performance of this function, all parts of the nervous system, and, indeed, all parts of the body other than the nervous tissues, since we are conscious of the body as a living apparatus, of which the different parts may be conceived (or, more properly speaking, recognize themselves), but which is also conceived as a whole.

Every living cell within the body may therefore be regarded as an integral part in making up the sum total of consciousness, since the fact is well known that no modification of any part can take place, without impressing consciousness.

An individual in perfect health and at perfect ease is, indeed, not attentive to the fact of even the existence of any particular portion of his body; but that every part is registering its condition, at every moment, is evident when we

contemplate that even the most gradual changes in the conduction of living processes of a general nature, such as come about by diminution of oxygen or food substance, or by improper elimination of excrementitious matters, impress themselves, and when reaching a certain degree, beget the consciousness of being in a close atmosphere, of hunger or thirst, of existing conditions which may not suggest a name, but are recognized as dissimilar from those present when all excretion is going normally on. But the physiologist will attribute this to direct impression on the cortical cells, due to a failure in the oxygen or food supply to them directly, or to retention in them of waste and disintegrated matters. When, however, only a portion of the body, however minute, becomes modified and that portion unmistakably remote from these cells, consciousness is also impressed.

In the one case, all the tissues of the organism are affected by a cause which gives rise to a conscious state. In the other, only a minute portion of these tissues are affected. Can we admit that the whole phenomena of consciousness in the one case lies in the functioning of the cerebral cells as directly determined by their nutrient fluid; and in the other in the functioning of the cerebral cells, as indirectly determined by an impression conducted from a distant part? Is it not more rational to believe all the tissues physiologically affected as having a direct share in the production of the result? Are the cerebral cells, in either case, more essential than the parts with which they are anatomically and physiologically connected?

The advantages accruing to the science as well as to the art of medicine, in the recognition and study of the differentiation of structure and the division of labor, need not be denied. It is practicable to know that the lungs carry on the interchange of oxygen and carbon dioxide between the atmosphere and the blood; that the parotid gland and its congeners secrete the saliva, that the kidneys remove the urea, that muscular fibre produces movement by contraction and so on, but all these facts, if not properly collated with others to which they are related, would form but a

fragile basis for an enlightened practice. Just so, while it is not only highly gratifying to the scientist to know that the cortical cells, so to speak, secrete consciousness, but also of great practical advantage to the physician and surgeon, yet to allow these organs to claim investigation alone, to the exclusion of all others, is, in the determination of the significance of either physiological or pathological manifestations affecting consciousness, manifestly illogical. The physician must determine between affections of this function which have a local, and those which have a general, origin.

When the respiration is observed and found abnormal, the intelligent physician does not alone diagnose disease of the lungs. He has learned to discriminate and to properly interpret the altered respiratory movements which belong, in one case, to asphyxia, in another to central nervous disease and in another to pulmonary affections.

It is not to be forgotten that he does also discriminate in affections of consciousness. The failure of the heart, the toxic properties of the blood, the mechanical pressure, are all understood in syncope, coma, apoplexy and so on. But when the heart becomes weak and the patient faints, he is satisfied with explaining the unconsciousness as due to the failure of blood supply to the cerebral cortex, forgetting that all other portions of the body are suffering a like deprivation. He forgets, when he places the patient in a horizontal position, that he thus favors the proper distribution of blood, not to the cerebral cortex only, but to all the other vital organs as well, not excepting even the heart itself. It should be remembered too, and this the writer would regard as the more essential point, that everything tending to the increase of blood supply to the brain is so much gained in the stimulation of the respiratory and cardiac centres, and therefore of the revival of life.

That these are important indications is apparent, when we reflect that consciousness is by no means an essential of life, while the circulatory and respiratory functions are. The true inference then is that in syncope cessation of consciousness is the result of cessation of the metabolic changes

which constitute the life processes in all the tissues, owing to the suspension of the circulation, and that the return of the former is simply dependent on the return of the latter; that the cerebral structures are only implicated to the same degree as all the other living tissues.

Where coma, or lesser disturbances of consciousness result from poisonous substances circulating in the blood, as in uræmia, alcoholism, narcotic poisoning, constant recourse is had to the theory of a "selective action" on the cortical cells. In the light of the position here taken, such an explanation is erroneous. All the tissues may be suffering equally, but since all have a share in the production of consciousness, this manifestation only ceases when all other vital manifestations have nearly come to an end—with the approach of death.

A contrast of the deep coma, continuing for days and weeks, incident to direct effects, such as hemorrhagic extravasation, with the gradually deepening form, ending in death, characteristic of uræmia, affords additional ground for the belief that in the cortical cells we have only the organ concerned in the expression, so to speak; in the secretion, the exosmosis, while the organic basis of consciousness, when viewed in its totality, must embrace all the tissues which, in their living state, are anatomically connected with these cortical cells as a portion of the same living organism, with a special share assigned to the nervous system.

MELANCHOLIA CLINICALLY CONSIDERED ESPECIALLY IN ITS RELATION TO LITHÆMIA, BRIGHT'S DISEASE AND GLYCOSURIA.¹

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MELANCHOLIA is a state of mental depression in which the mental pain bears no relation to the supposed cause, and is dependent not so much upon the environment as upon somatic conditions. I do not refer at this time to the melancholia which is frequently one of the stages of mental disorder, for it is well known that this form of insanity may precede or follow a maniacal attack, may usher in paretic dementia, or may occur as one of the phases of circular insanity. My purpose is rather to consider melancholia as a clinical entity, distinct and complete in itself. The all-important symptom in this form of insanity is the mental pain which entirely dominates the will and life of the patient. It may be present in every degree of intensity, and the various arbitrary divisions of this psychosis made by authors are so many expressions of the different degrees of severity of this mental suffering. In simple melancholia the mental pain is pronounced yet decidedly less than that observed in agitated melancholia or in melancholia with stupor, reaching in this last type of the disease the most terrible anguish; the patient remains stupid and motionless because of very horror inspired by fearful hallucinations and delusions, such for example as seeing his family butchered before his eyes, and he being compelled to eat food mixed with their blood.

Melancholia may arise from a delusion, yet more often the misery which these patients suffer, give rise to the delusion. "A saturated solution of grief," says Savage, "causes

¹ Read before the North Dakota Medical Association, Fargo, May 29th, 1891.

as it were, a delusion to crystalize and take a definite form." ²

The nutritive condition of a patient suffering from melancholia is usually very poor; it most frequently occurs in conditions of physical weakness; unquestionably neurasthenia sets up this disordered mental state and be the clinician ever so skillful, he will yet frequently be greatly puzzled to say just where the one pathological process ends and the other begins. "In private practice" says Dr. Spitzka, "melancholia, especially of the lighter grades, is very common, and is not unfrequently treated as 'neurasthenia,'—whatever that may be or may not be—and dyspepsia, and, thanks to the self-limiting tendency of the psychosis, it is frequently cured on either theory." ³

I wish just here to emphasize the necessity for the physician in dealing with this class of cases to be especially on his guard, for it is in this mild form of melancholia that suicidal impulses so frequently dominate the will power of the patient and drive him to his own destruction. It is not an unusual experience to have patients supposed to be hysterical or neurasthenic hang themselves early in the morning before the rest of the family have arisen. Those cases of which we read in the daily papers where some young person has killed him or herself, because of unrequited love, are usually the idle fancy of an enterprising reporter.

"Men have died from time to time, and worms have eaten them, but not for love." It is seldom sentimentalism which kills these persons, but the regnant power of a suicidal impulse, asserting itself in an unrecognized melancholia. Toxic materials in the blood undoubtedly excite this painful emotional state. This mental condition "may consist of a series of fits of mental depression of greater or less intensity, separated by periods of mental health." ⁴

Aside from the mental pain there are two other factors in this depressed mental state which cannot be overlooked;

² Insanity. Geo. H. Savage, M.D., p. 152.

³ Manual of Insanity, 2d Edition. Spitzka, p. 148.

⁴ Insanity. Geo. H. Savage, M.D., p. 163.

viz., insomnia and fixed ideas. The former is a most distressing symptom, and seems to bear a direct relation to the psychical distress; despondency and fixed ideas are usually, at least in my own experience, preceded by sleeplessness. In agitated melancholia the patient is unable to sleep because of his restless and agitated condition, while on the other hand many patients lie quietly without losing consciousness, although experiencing great mental suffering. Dr. Savage describes a patient of this class "who for three months was never once found asleep by the night watch, who visited her hourly, and on her recovery she asserted that she never lost consciousness during the whole three months." In many cases the patient complains of a sleep, broken and fitful, disturbed by most frightful dreams, and of awaking in the morning depressed and unrefreshed.

It is very probable that the lack of nourishment during the night, coupled with the unrefreshing slumber, causes an unstable nervous state which allows the suicidal impulse to assert itself in this time of especial weakness; for as already stated, it is in the early morning hours that these patients usually commit the overt act. The fixed ideas from which melancholiacs suffer are most distressing to the patient and at the same time most interesting from a clinical standpoint. As an example a patient said to me recently that he was constantly tormented with the idea that he would go insane; in his most depressed moods it was never for a moment absent from his mind, except during sleep which was restless and disturbed. This idea was, after some months, supplanted by a most persistent suicidal impulse from he which now suffers. Another patient, a woman, told me that suddenly, a few months ago, while partaking of the Sacrament, there came into her mind an oath which has since tormented her night and day, for she has slept but little. She seems constantly in a fit of abstraction due to the fact that her mind is continually dwelling on this blasphemous expression.

This patient has suffered from attacks of precordial fright and has marked suicidal tendencies. As the patient improved the fixed idea gradually disappeared.

Under the three clinical groups previously mentioned all cases of melancholia cannot be clearly brought for the reason that there are no hard and fast lines along which a classification of the distinctive types of this psychosis can be made, so insensibly do the various forms merge the one into the other. To the different varieties of mental depression already described I would add the further one suggested by Bevan Lewis, viz., melancholia with delusions including the hypochondriacal form. The reason for this is evident from the fact that there are many cases of melancholia attended with delusions which are characterized by neither agitation nor stupor.

The distinguishing feature in simple melancholia is psychological pain which is not usually associated with obvious disturbance of the intellect. The patient is despondent, irascible, suffers from fits of abstraction during which his painful emotions control his life and thought to the entire exclusion of everything else; he is uncommunicative and sleepless; his appetite is impaired, digestion and assimilation poor, tongue coated, bowels constipated, his cerebral reflexes are dull, and he is usually indifferent to his surroundings.

In the mildest forms of simple melancholia there may be present only depression, associated with fixed ideas, and usually accompanied by insomnia. I have under my care at the present time a young man actively engaged in business who, to an unpracticed eye seems in perfect health, who yet is depressed, sleepless, and suffers constantly from fixed ideas of a suicidal nature. These various groups of melancholia are best illustrated by typical cases.

Mrs. H., English, age twenty-five years, was until three weeks ago perfectly well; at that time she became greatly depressed and has ever since suffered from a loss of appetite; she complains of no actual pain, but says she has constantly a bewildered feeling in the head, is at times exceedingly nervous and restless, and her despondency is greatest during the early morning hours. She suffers great mental pain which is much out of proportion to her physical symptoms. She dares not be left alone lest she be forced to take

her own life; this fear is constantly with her, the last thought at night and the first when she awakes in the morning. She cannot concentrate her mind upon anything because this fearful apprehension that she may do herself violence dominates all her mental processes. When the mental pain is most pronounced she becomes nervous and excitable, experiences difficulty in breathing, her face flushes, and she feels an almost uncontrollable impulse to break out into a frenzy and to tear and destroy everything within her reach, also to scream at the top of her voice. She is extremely apprehensive that when one of these mental storms sweeps over her she may lose all control of herself and do some serious injury either to herself or to others. This lady has undoubtedly a nervous diathesis, has no pronounced insomnia, no pain or post-cervical ache, no illusions, delusions or hallucinations; the one feature of her case is its mental pain.

Mr. J., American, thirty-three years of age, began to feel depressed about the first of January of the present year, this being the seventh attack of the kind through which he has passed. His bodily nutrition is much impaired, his appetite being fitful and very irregular.

He sleeps well during the first part of the night, but wakens very early, usually unrefreshed; his depression is greatest in the morning. The physical symptoms of which he complains most are the post-cervical ache and pain in the back and vertex. His memory is very poor, and he has much difficulty in concentrating his mind upon any desired subject. When most despondent he dwells constantly upon his sickness, and is unable to rid himself of the idea that he will never recover.

The intensity of the fixed ideas in this patient is not so marked as is usually found in this form of insanity, and it is especially worthy of note that the mental pain is not of such a character as yet to have caused a development of the suicidal tendency, which I consider the most serious feature of simple melancholia.

The chief characteristic of this type of melancholia is its resemblance to neurasthenia or to ordinary hypochondriasis, and this patient would usually be classed as a neurasthenic, but in reality the case is a typical one of simple or reasoning melancholia (*Melancholia sine Delirio*). It will be

observed that there are no illusions, delusions or hallucinations present, as I have already intimated. A mistake upon the part of the physician in its diagnosis might be fatal to the patient, for it is especially in this mild form of the disease that the suicidal tendency often unexpectedly develops.

Mrs. W., aged thirty-five, married, has nine children, the youngest being four months, the oldest thirteen years. The present trouble appeared about three weeks ago; it began with insomnia, what little sleep she obtained being disturbed by frightful dreams. This patient's mind dwells upon a certain thing which she refuses to disclose except to say that it is very bad. She has paroxysms of nervousness at which times she feels like jumping up and screaming; she suffers from suicidal impulses and believes she is becoming insane. She has also periods of weeping due to the belief that she will never recover, and that her children will be left motherless.

I append two cases which are illustrative of the form of melancholia which is attended by delusions or hallucinations.

Mrs. G., aged 33, German, no children, but two miscarriages; no mental disease in the family. Her present trouble dates from last November, when, one day during the communion service, she was tempted to utter an oath. In the afternoon the same thought came to her, accompanied by strange feelings, and in the evening as she was reading in the Bible, the same oath came into her mind again.

She believes that she has committed the unpardonable sin. She had had no insomnia previous to the beginning of this trouble, nor was she unable to sleep at the commencement of the attack, at which time neither were the bad thoughts present with her all the time. Eventually, a period of sleeplessness came on which lasted about six weeks, during which she could not rest without the aid of some hypnotic. When she did sleep it was to be troubled with horrible dreams and to awaken unrested. Waking, her first act was to pray that she might get these horrible thoughts out of her mind. At the time the insomnia came on she also began to have pain in the back and at the nape of the neck. At first she felt worse in the morning, but

now the bad feelings persist all day. She has paroxysms of nervousness, when she feels that she must jump up and swear. She thinks that her friends have not treated her rightly, is jealous of her husband, has a nameless dread of impending evil and is afraid to be left alone. One morning between seven and nine o'clock, while sitting with her sister, she was seized with a strong impulse to hang herself. This desire to kill herself she believes comes from Satan. Obscene words come constantly into her mind. She has hallucinations of the sense of smell, perceiving an odor of sulphur and blood; she also has hallucinations of sight, seeing snakes and other repulsive creatures. Satan appears to her almost every night telling her that she is lost.

My second case illustrative of melancholia with delusions or hallucinations is that of a young American clergyman, 25 years of age. Three years ago, while greatly depressed in health and suffering from persistent insomnia, he passed through a period of great despondency; the attack came on during Lent and lasted six weeks. The present attack, for which the patient has just consulted me, also appeared during Lent. It is well to note here that both these attacks developed during Lent, which was most rigidly observed by him. He complains of extreme insomnia and of a feeling of weight in the whole head, but especially at the base of the brain.

In the morning there is a great deal of nervousness and jerking of the muscles, with marked restlessness. The cerebral reflexes are dull; the face, while expressionless, shows marked evidence of mental pain. He has always been inclined to fits of brooding or abstraction, but these have been especially noticeable since this depression has come upon him. He has no illusions or hallucinations; he believes that he has a disease like leprosy and that his body is dying piecemeal; he thinks his voice and blood badly contaminated by the leprous poison; any little eruption appearing on the skin he attributes to this taint; he has begged that his razor might be taken from him, evidently fearful that he may do himself bodily harm.

He attributes this physical collapse to the fact that his soul has been dead for the last three years; he did not accept his moral probation, which now is forever past, and he is lost. He says that the chief difference between his present attack and that of three years ago is that the previous one was characterized by great anxiety of soul, while at the present time his soul is dead and he is perfectly indifferent to his lost condition. He calls his virtues negations, be-

lieves that all that is good in him has been destroyed and accounts for his inability to pray by his having no soul.

In the hypochondriacal form of melancholia the delusions are not psychical but bodily in character. A case I remember to have seen in Baltimore was that of an old colored woman whose delusion was that there was a lizard in her stomach. She was greatly depressed and was continually crying and wringing her hands.

For the two cases illustrating respectively agitated melancholia (*Melancholia Agitata*) and melancholia with stupor (*Melancholia Atonita*), I am indebted to Dr. R. M. Phelps, First Assistant Physician of the Second Minnesota State Hospital at Rochester.

The first is that of Mrs. A. B., married, aged 45, having an uncle insane, but her first attack. Admitted to the hospital March 29, 1889.

The history accompanying the patient was to the effect that the trouble appeared some months before; that after a month she began to improve, but that, during the four weeks preceding her admission, she had grown steadily worse. She had been very despondent upon religious subjects, though not a member of any church; had spent much of her time weeping and wringing her hands, thinking herself eternally lost. She is said to have meditated the destruction of her children.

For several days after her admission to the Hospital she would eat little or nothing, and as she would not promise to eat, she was fed with a tube. She still insisted that she was very wicked and deserving of hell. During the summer of 1889 and the winter of 1889-90, the patient continued very obstinate about taking food, often being fed with a tube; she was exceedingly agitated, being on her knees a great part of the time; she was continually out of bed at night, and during a severe attack of erysipelas it was found necessary to keep her tied in bed in order to restrain her. She also developed decided suicidal tendencies, trying to jump from windows and to gain access to poisonous medicines. During the past year her behavior has been somewhat more quiet; she makes fewer attempts to destroy herself, is more easily fed and less agitated in manner; she still, however, refuses to sit down, has never been known to smile and is usually found standing with head hanging, looking at the floor and wringing or picking her hands.

She will only talk of her desire to go home and of her ill deserts. She never reads and is very careless about her dress; her mental condition remains unchanged.

The case of melancholia with stupor is that of a young married woman, aged 24, admitted to the Hospital in May, 1889, with her first attack; the cause was puerperal. The child was born in February and about the first of April, after some preceding symptoms of irritability, she was quite suddenly seized with the symptoms of acute mania. She was violent only for a day. On her admission she would not talk willingly on any subject, and her occasional answers showed an incoherent condition, with delusions. She denied ever having had a baby. Her past history showed her to have been quick tempered and occasionally hysterical. An aunt had been insane.

This woman remained at the Hospital until the middle of December, 1889. Up to the first of that month she seemed to be lapsing more and more into a profound stupor which was almost dementia. She could not be gotten, by ordinary means, to show any interest in anything and would scarcely make a move voluntarily. She had to be dressed, undressed, put to bed and taken to meals. She would say nothing, do nothing, but remain quietly wherever she might be placed.

In spite of constant tonics, she became more and more emaciated; her head bent forward until it rested upon her chest, and it was necessary to place cushions in her chair and behind her to prevent bed-sores. In October she was visited by relatives but would pay no attention to them, and seemed in almost total ignorance of what they said to her.

Quite suddenly, early in December, the patient came out of this profound melancholia, and within a week reached a perfect ability to speak and act as a rational person. She described herself as under a spell, her will seemingly paralyzed and she unable to move even when she desired to do so. A letter written by her at this time best describes her condition.

[LETTER.]

December 1st, 1889.

DEAR MOTHER:

If anyone had said in my hearing a month or six weeks ago that I should be writing a letter to you to-day, I should have thought they were crazy. No longer ago than that I was but very little better off than when A. was here.

I suppose she has told you of the condition she found me in. Oh, mother, it has been awful, and I don't understand

it at all. During all the past summer I have had no mind of my own at all. I knew all that was going on around me and realized keenly the condition I was in, but some force held me down. Just think, mother, I could not talk and they fed me like a baby and had to take me to the water closet or I would muss myself. Oh, it was awful! You all may think that I could have helped it, and it even seems to me now that I could, too; but I know that at the time I could not. And I was so afraid of everything and everybody, they would lay a paper on my lap and it would stay there until some one took it away; I did not dare to touch it.

But I am sure that I am getting better of all that, though I am far from what I ought to be. J. is coming to get me soon and I hope I shall get to be all right again, as I have something to live and work for."

Delusional, agitated and stuporous forms of melancholia are so pronounced in their clinical characteristics as to need no further description. The melancholic triad, viz., mental pain, post-cervical ache and insomnia, described by Dr. Landon Carter Gray has been usually present in my cases; it is not always seen, however, in the very mildest forms of the disease. That manifestation of a nameless terror, melancholic frenzy (*Raptus Melancholicus*), justly regarded as an episode simply of this affection, is but an intensification of the misery occurring in the agitated and stuporous forms of this psychosis.

Hallucinations are said to be more frequent in melancholia than in any other form of insanity, with the single exception of paranoia.

Voices are constantly whispering obscene words, oaths and threats; visions most frightful are to them unquestioned realities; associated with all these are delusions of the most distressing nature, especially of persecution. The constant presence of these as realities before the mind of the patient keeps him in a state of perpetual terror, at times so intense as to cause an outburst of melancholic frenzy. These attacks are preceded by distressing sensations in the heart region, said to be due to a functional disturbance of the pneumo-gastric and vaso-motor centres, which are known as precordial fright. These conditions are seldom encountered even in asylum experience.

While the relation existing between lithæmia and neurasthenia is an interesting one, it is most of all practical. Is this relationship primary or secondary in character, or may it be both?

If the latter, how may we determine when it sustains the relation of cause, when that of effect to the genesis of this affection? All successful therapeutic endeavor must rest upon a clear conception of two basic principles: first, what the so-called lithæmic state really is; second, does it cause melancholia, and may it also be associated with the idiopathic form of this disease as a purely secondary manifestation? "In certain states of the system," says Bartholow, "characterized by deficient oxidation, urea is not sufficiently formed and instead uric acid, a lower grade of oxidation and a product of the disintegration of albuminoid substances, results. When albuminoid matters are taken in excess of the power of the system to convert them, or when the supply of oxygen to the blood is deficient for any reason, urea is not found but uric acid and urates are abundantly excreted by the urine."⁴ Dr. Murchison suggested for this condition of hepatic incompetence, with its group of associated symptoms, the name lithæmia; Flint had, however, previously described the same clinical concept under the head of uricæmia, and quite recently Von Jaksch designates it by the name of uric-acidæmia, which latter term receives the endorsement of Dr. A. Haig. The disturbing influence of uric acid on the higher psychical centres is said to give rise to melancholia. Dr. Haig believes that mental irritability and depression, with their frequently resulting murder and suicide, arise from an excess of uric acid in the blood.⁵ Recent investigations have thrown much light upon this rather obscure subject and it is now certainly known that there are other factors as potential for harm as uric acid and the oxalates which exercise such a pernicious influence upon nerve centers and which may

⁴ Lithæmia. By Roberts Bartholow, A.M., M.D., LL.D. System of Medicine. Pepper, Vol. II., p. 969.

⁵ Uric Acid in Diseases of the Nervous System. A. Haig, M.A., M.D. Brain, 1891, p. 74.

give rise to the melancholic triad. "This view," says Dr. Porter, "is largely sustained by the fact that between the serum-albumen, as introduced into the body, and its most complete form of oxidation—urea—twenty-eight nitrogenous compounds have already been discovered and traced into the urine, some of which are deadly poisons. These poisonous elements circulating in the blood act differently upon the various parts of the nervous system and functions of the body."⁶

"I believe," says the same writer, "that all of that host of vague and often ill defined 'bilious' (lithæmic) and 'neurasthenic' symptoms are best explained by the passage into the general circulation and the incomplete elimination from the body of an almost innumerable number of ptomaines and leucomaines, products of incomplete nitrogenous oxidation." So, therefore, we can no longer regard uric acid as the only agent in the causation of that nervous irritability and mental depression so characteristic of the lithæmic state, but must consider as equally potential and pernicious the ptomaines and leucomaines which have escaped the "peptone-destroying action" of the hepatic cells. Melancholia due to the toxæmia which arises from the so-called lithæmic condition is no longer a matter of doubt, but an established fact. Dr. Mickle well says that some of the mental phases observed in general paralysis, such as the hypochondriacal or melancholic, may be accounted for by alterations in the constitution of the blood. "In relation to this, we may bear in mind the mental coloring usually associated with states of toxæmia; as, for example, the depression attending cholæmia; the ill temper, anxiety and depression of chronic lithæmia, and the apathy and unconcern of pyæmia."⁷

"Since I first wrote on uric acid and mental depression," says Dr. A. Haig, "I have heard from Professor C. Lange, of Copenhagen, that he has, for a long time, observed and

⁶ Digestion, Assimilation and Oxidation: Their Normal and Abnormal Conditions in relation to Health and Disease. By William Henry Porter, M.D. The Medical News, Jan. 10th and 24th, Feb. 28th, 1891.

⁷ Mickle on General Paralysis of the Insane. 2d edition, p. 353.

has written a monograph concerning certain conditions of periodical depression, which he connects with the uric acid diathesis, and treats successfully by a diminution of meat food and certain rules as to exercise, etc. I have also previously mentioned that Dr. Broadbent notices the frequent association of melancholia and mental depression with high tension of the pulse, and records the successful treatment of some of these cases by milk diet. . . . In conclusion, I will say that I look upon these functional disorders as the result of the vascular conditions produced by uric-acidæmia, the exact nature of the disorder—whether headache, epilepsy, or mental depression—being determined partly by the intensity of the uric-acidæmia (lithæmia) and partly by the anatomical and physiological relations of the vessels and nerve structures concerned, and that these latter, being inherited, determine in several succeeding generations the nature of the disturbance which uric-acidæmia will produce.”⁵

In my opinion, idiopathic melancholia is the more usual form of the psychosis, and the presence of uric acid and other evidences of incomplete oxidation of the albuminoids, associated with this affection is usually secondary in character. “I am convinced,” says Dr. Gray, “that this possibility, namely, that uric acid in so-called lithæmia may be a product as well as it may be a cause, should never be lost sight of in the therapeutics of this affection.”⁶

The symptoms of nervous irritation resulting from this form of toxæmia are truly legion; chief among them are vertigo, sleeplessness, mental depression, which may gather force as the condition becomes more pronounced and develop into a well marked melancholia, amblyopia, noises in the ears, most probably caused by the lithæmic pharyngitis, which extends to and involves the Eustachian tube.

There may be associated with the pharyngitis a laryngitis due to the same cause; Dr. J. E. Schadle informs me

⁵ Uric Acid in Diseases of the Nervous System. A. Haig, A.M., M.D. Brain, 1891, pp. 74, 97.

⁶ The Nervous Symptoms of So-called Lithæmia. By Landon Carter Gray, M.D. The New York Medical Journal for Jan. 16th and 23d, 1886.

that he has seen quite a number of these cases and that they resist all treatment but that which is directed against the lithæmic condition. I have in one instance observed great sensitiveness to odors; sleeplessness resulting from a nervous irritation caused by the odor given off through the steam heating apparatus. Neuralgias, paræsthesias, vasomotor disturbances and not infrequently fevers are due to lithæmic toxæmia. Among the many curious manifestations of disturbed nervous function growing out of the lithæmic state, I recall one case which possessed some features of unusual interest.

The patient was a very intelligent lady who suffered from a hemi-paræsthesia of the entire left side of the body, associated with hallucinations of hearing of a most pleasurable nature. Some years previous she had, while traveling in Europe, especially enjoyed the singing of the choir boys in the great cathedrals. While suffering from this hemi-paræsthesia and the associated mental depression and irritability, she was greatly startled by hearing the same voices chanting the same sacred hymns to which she had listened with so much delight years before. Under the usual routine treatment she speedily recovered.

Notwithstanding the assertion of Sankey "That I do not consider the true pathology of insanity to have any necessary relation to kidney disease; but when kidney disease is found it shows there has been an alteration of some kind in the quality of the blood,"¹⁰ or that of Bucknill and Tuke that "In the whole course of our practice we have never met with an instance of decided Bright's disease among the insane,"¹¹ or the opinion of Griesinger that any casual relation between Bright's disease and insanity is extremely rare, I do not believe that the importance of the relation between insanity in its various forms and Bright's disease has, even by alienists, been properly appreciated.

Dr. Blackburn, special pathologist to the Government Insane Asylum at Washington, D.C., records in the Annual Report of that Institution of 1889, the result of his examina-

¹⁰ Lectures on Mental Diseases: Sankey, p. 246.

¹¹ Bucknill and Tuke on Insanity. p. 435.

tion of the kidneys in 263 cases of insanity, and found 43 cases "in which the deviation from the normal was sufficient to constitute disease, including cases of senile atrophy of pathological degree." Dr. Blackburn assures me that he believes "the errors of judgment in the examination of the 263 cases studied have been mainly in attributing too *much* to *post mortem* changes rather than too little." Dr. E. A. Christian, in an exceedingly able article on Chronic Bright's Disease in its Relation to Insanity, says, "Out of a total of upwards of 2,600 admissions to the Eastern Michigan Asylum, thirty-seven cases have been collected in which the appearance of grave disturbances of nutrition have been coincident with a discovery of albumen and tube casts in the urine. In only about a dozen of these cases could it be said that the mental manifestations were not dependent upon or modified to some extent by the renal disorder." Dr. Alice Bennett, in a recent paper on Insanity as a Symptom of Bright's Disease, records more than fifty cases arising from this constitutional condition.

It matters little what may be our views of the pathology of Bright's disease, whether we accept the theory of Da Costa that it originates in a lack of nutrition of the cells of the sympathetic ganglia, or that of Gull and Sutton that the kidney affection is but an expression of a general "arterio-capillary fibrosis," or whether we agree with Meigs that it is primarily vascular, *i.e.*, an endarteritis, the renal disease being but a local manifestation of the general condition; so that we fully appreciate its direct, causative relation in the production of the insane state. Dr. Christian very happily divides the insanity of Bright's disease into two classes: "The uro-toxic and the vascular, according as the one or the other set of symptoms predominates."

Under the uro-toxic class "are included not only those undoubted cases of uræmic insanity in which the symptoms are of the nature of delirium, the result of blood poisoning, but also those cases in which the mental perturbation is as much the result of a lowered state of bodily nutrition as of the direct action of poisonous matters upon the nervous

centers."¹² It is, moreover, true that this impaired state of bodily nutrition is as likely, or even more likely, to be present in those cases of chronic Bright's disease where the structural changes occurring in the vascular system are most pronounced. As melancholia is invariably associated with a lowered bodily nutrition and frequently results from such a condition, it is easily seen that this form of insanity, occurring in connection with chronic Bright's disease, may be the expression of a uro-toxic condition, or it may equally arise from a primary pathological process of the blood vessels of the body; either of which sources of origin are in harmony with our present ideas of the pathology of chronic Bright's disease.

In cases of Bright's disease, associated with melancholia, Dr. Bennett calls attention to one feature which she considers diagnostic.¹³ It is, to use her own words, "The sense of impending danger, overwhelming fear of some threatening calamity, which inspires the one irresistible impulse to 'get away' which dominates the individual for the time, and under the influence of which he often jumps out of the window." With the absoluteness of Dr. Bennett's conclusions I cannot agree; for in simple melancholia, unassociated with any lesion of the kidneys; in glycosuria, attended with melancholia, and in that variety of mental disorder described by Clouston as "half delirium and half mania," due to an intense degree of uræmic poisoning, I have seen this *sense of impending danger*.

In those cases of apparently simple melancholia which do not yield to the usual methods of treatment, it is of the utmost importance to make a careful investigation for the presence of albumen and casts, which, if found, will afford an ample explanation for the persistent character of the disease.

I have specially called attention to this relation which exists between melancholia and Bright's disease, because

¹² Chronic Bright's Disease (Arterio-Capillary Fibrosis) in its Relations to Insanity. By E. A. Christian, M.D. The Journal of the American Medical Association, March 23, 1889.

¹³ Insanity as a Symptom of Bright's Disease. By Alice Bennett, M.D., Ph.D. Medical Standard, November and December, 1890.

to you, as general practitioners, is given the first opportunity for the investigation of these cases in their inception. It will devolve upon you to establish a prognosis which does not hold out delusive hope, while you may, at the same time, afford temporary relief by proper therapeutic measures.

The relation between melancholia and glycosuria is much more intimate than that between Bright's disease and melancholia. Clouston describes two cases, both melancholia, which were associated with glycosuria.¹⁴ These had delusions of poverty, were not inclined to eat and were wanting in natural affection. Dr. G. H. Savage believes melancholia to be the usual form of insanity, occurring with diabetes.¹⁵ It has been his observation that the diabetic symptoms disappear in part, or whole, during the period of mental derangement, there seeming to be a sort of alternation between the two conditions. In his experience he has seen acute diabetes replaced by acute melancholia, "this latter giving place to diabetes, which once more had been replaced by temporary mental depression." He believes "that similar causes might give rise to either insanity or diabetes; that diabetes occurred in the same families as did insanity and that there might be an alternation, so that insanity occurred in the one generation and diabetes in the next; again, in the diabetes itself the symptoms, one or all, might be replaced for a longer or shorter time by mental symptoms."

A case in my own practice was that of M. A. This patient when he first consulted me said that he was in perfect health, aside from an unreasoning fear of being alone. He never came to my office unaccompanied, insisting that he was afraid something would happen to him before he could reach home. As I had frequently found this morbid fear associated with the neurasthenic condition, I at first considered it but of slight diagnostic importance, but when I found that it did not give way to the usual remedies, I became apprehensive and instituted a careful investigation,

¹⁴ *Mental Diseases*; Clouston, p. 411.

¹⁵ *Diabetes in Insanity*; Dr. G. H. Savage. *The Review of Insanity and Nervous Diseases*, March, 1891.

which revealed to me the true nature of the disorder. The patient was an American who had been perfectly well until the beginning of the present trouble three years ago, which seemed to him to have had its origin in a drunken bout. His sleep is exceedingly good, his appetite is excellent, though he drinks but little water. He has, at times, felt in a bewildered state and has suffered from a bad feeling at the base of the brain; again, he would be for weeks free from any unpleasant symptoms whatever. He is very restless, while a little unusual exertion quite exhausts him; the ascent of a flight of stairs causes inordinate action of the heart and increases respiration to a marked degree. Lately he has not been able to do any manual labor without utter exhaustion. He voids about two quarts of urine daily, which his wife says is thick and frothy when allowed to stand. It has a specific gravity of 1028-1026, after using the yeast test. The presence of sugar is shown by both Fehling and the yeast test. He says there is a thick, tenacious mucus with a sweetish taste constantly in his mouth. For the last two months he has done no work, but has yielded to the morbid fear which has possessed him,—that of some impending evil, or that he may become so despondent as to do himself violence, of which he lives in a constant state of apprehension.

The history of this case demonstrates the necessity of a discrimination between the morbid fear accompanying a disturbed functional condition and that of melancholia, which may be an indication of a grave constitutional disorder.

There is no reason why simple melancholia should not be treated at home. It is of the utmost importance to remember the suicidal tendency which is so characteristic of this variety of melancholia, and which constitutes its chief danger; for if these cases are kept from self-destruction they always recover. The delusional, agitated and stuporous forms of this psychosis can usually be more successfully cared for in an asylum. In those cases where the suicidal tendency is pronounced, it is good therapy to give them in the morning as soon as they awake, some nourishing food

which seems to relieve the nervous instability which is so characteristic of the early morning hours. Over feeding, massage and an abundance of fresh air, together with such hypnotics as chloralamide, paraldehyde, sulphonal, when there is insomnia, and the administration of small doses of Squibb's aq. ext. of opii constitute the chief therapeutic measures indicated. I no longer rely upon the use of mineral acids and the mercurials in the treatment of lithæmia. I believe it to be good practice to eliminate the old bile from the system by the use of a brisk mercurial purge; then the patient should be placed upon a strict nitrogenous diet, requiring him to be in the fresh air as much as possible, not alone for the sake of *exercise*, but for the oxygen which is thus obtained and which this class of patients so greatly need. I have found the use of oxgall, as advised by Dr. Porter, to be of especial value in this condition; adding, should the patient be constipated, a little aq. ext. of cascara sagrada. The treatment of melancholia resulting from chronic Bright's disease and glycosuria resolves into simply a treatment of the constitutional disorder.

HEMICRANIA WITH OPHTHALMOPLÉGIA BILATERAL.

In the "Bulletino delle Scienze Mediche," for Feb., 1891, Dr. Ignazio Cantalamessa, of Bologna, after describing very minutely a case of hemicrania, arrives at the following conclusions:

1. That ophthalmoplegia is not always unilateral, but may sometimes be bilateral.

2. That in some cases the attacks present two periods; the first constituting a group of true attacks occurring in the winter season; the second constitutes attacks occurring in the summer season, which are of relative calmness followed with the return of winter by severe attacks.

3. That hemicrania ophthalmoplegia may be associated sometimes with paralysis of other nerves, as in the author's case, where the seventh nerve was implicated.

4. That it may be associated with respiratory arrhythmus.

5. That the case in question was dependent upon hysteria.

W. C. K.

ELECTRICITY AS A THERAPEUTIC AGENT— WHAT CAN BE DONE TO DETERMINE ITS VALUE? *

By W. J. HERDMANN, M.D.

THERE are few subjects toward which the mind of the medical practitioner is more in need of proper adjustment than that of the use of electricity as a therapeutic agent. It is now more than a century since a professor of anatomy in the University of Bologna announced to the profession—that is daily puzzling its brains over the various ills that flesh is heir to—that he had discovered, in the association of dissimilar metals with the legs of decapitated frogs, a force was generated capable of acting as a substitute for nerve impulse in causing muscular contraction.

Electro-physiological inquiry received a new impulse from this discovery of the effects of a continuous or galvanic current on living tissue, and from that time on there has been an unceasing activity displayed by many of the best minds in the profession in adding to our knowledge of the power of electricity in modifying and controlling the vital processes going on in animal structure, until medical and scientific literature is burdened with the rich fruits of their researches.

Many of the discoveries in electro-physiology suggest valuable additions to our therapeutics, and while there have not been wanting examples of able men in the profession like Remak, Duchenne, Von Ziemssen, Erb and De Watteville, who have used their best energies to gain for electro-therapeutics the recognition which its importance deserves, its power as a curative agent is as yet but imperfectly understood by the vast majority of physicians. The reason for this is readily explained. The work of the physiologist, though indispensable as antecedent to rational

* Read before the American Medical Association, June 5th to 8th, 1891.

therapeutics, is often in too crude a state to be readily made available by the busy practitioner. A hiatus exists between the discoveries of pure science and their practical application to the requirements of every-day life. Men are rare who have either the time, the opportunity or the ability to acquire such experience in both fields of research as to adapt the discoveries of the one to the needs of the other. Electric physics, physiology and pathology each are so comprehensible in their scope that, with the best facilities, a lifetime is spent in acquiring a knowledge of what is known of each. It is no wonder, then, that during the past century, in which so much has been revealed concerning the mysterious working, both on the organic and inorganic world, of that strange force we call electricity, so little practical use has been made of it by the physician, and that it has, in common with many other discoveries in the twilight of their early dawn, been seized upon by the impostor and charlatan as suitable instruments with which to prey upon the minds and pockets of a credulous and expectant world; and when, in addition to this, we recall the fact that there has existed among those who have attempted to direct our minds toward the therapeutical application of electricity the greatest diversity of opinion as to the form of currents that should be used and the methods for applying them, and that no attempt has been made at uniformity even in the instruments employed for this purpose, it is not surprising that electricity as a therapeutic agent has been looked upon as of rather doubtful efficiency by the majority of physicians. But, fortunately, while these causes have operated to bring electricity into some disrepute in the minds of conscientious practitioners of medicine, the rapid strides it has made in other fields of usefulness have raised it in importance and esteem, so that its power and efficiency must be everywhere recognized by the man, be he medical or lay, whose daily life is so dependent on its labor. It now requires but little argument to convince any man that electricity may probably effect some change in the disordered state of his bodily economy who every hour of the day is depending upon this selfsame force to aid him in the mi-

nutest details of his daily life. Nor does the *physician* now entertain the same contempt which once he might have done for an agency which, in these latter days, lights up his house, washes his linen, stitches his clothes, prints his newspapers, cooks his meals, transports him to his office, and brings him into communication with his patients, far or near, while sitting at his desk. So insidiously have the commercial uses of electricity crept in upon us, and so indispensable have they become already to our comfort, that were we, as a people, thrown back on the resources of even a decade ago, we would feel somewhat the same uneasiness and discomfort that Rip Van Winkle expressed on waking from his long sleep. While the profession at large has given but little or no attention to the therapeutic uses of electricity, there has been a skirmish line in advance of the main body that has not been idle, and along this line there have not been wanting bold and self-reliant spirits who, with the directness of aim and the clearness of observation of the sharpshooter, and with a genius for experiment and fertility for invention seldom excelled, have done efficient work in making inroads on diseases that have not yielded to other modes of treatment, or, if so, with far less readiness.

We do not question that claims have been made for electro-therapeutics that are fallacious and unsound, but, granting this, the work of the last fifteen or twenty years leaves much that can withstand severest criticism and will compare favorably with the results obtained by any other method of treatment of disease that receives the unqualified approval of the profession. The work of such men as Erb, De Watteville, Apostoli, Keith, Beard, cannot be turned aside with a sneer, while the universal testimony of the neurologists that this agent is indispensable to the successful treatment of a long range of diseases coming under their management challenges our acceptance and respect.

The therapeutic effects of electricity, as far as they have been determined by physiological and clinical observations, may be classified as *stimulant* or *electro-tonic*, *sedative*, *elec-*

trolytic and *cataphoric*. To these should be added the *cauterizing* action, since the galvano-cautery has a range of therapeutical applications peculiar to itself.

STIMULANT ACTION.

The *stimulant* and *electro-tonic* influence of certain forms of electric application is readily demonstrable, and is applicable to a great variety of conditions of bodily derangement. Where muscular tissue lacks tone, whether it be voluntary or involuntary, striped or unstriped, it can be readily subjected to the stimulating influence of the electric current and in a variety of ways. For this purpose we can employ the static machine, the cathode of a continuous current, or the induced current completely interrupted or alternating, and, by the selection of one or the other of these forms, according as it seems best adapted to the condition, the functional vigor can be aroused in an organ in which such muscular tissue forms an essential part. And how universal are such tissues throughout the body! Thus the circulation in any part may be quickened, passive congestions overcome, congested organs relieved, and the evil results of malnutrition from excess or lack of blood in a part, or from feeble efforts at elimination, may be corrected by this action of the electric current. Functional disorders due to failure in vaso-motor control are especially benefited by such applications.

The good effects of such currents are daily demonstrated in the clinic by increased growth in paralyzed limbs, relief of pain, improved action of the viscera and an increased sense of well-being manifested by the patient's manner and action. A torpid liver, a congested spleen, constipated bowels due to lack of secretion or feeble peristalsis, a congested or subinvolted uterus, chronic congestion of the ovaries, exhausted nerve centers with attendant hyperæmia or anæmia, producing those perplexing states of neurasthenia or spinal irritation, are all conditions that can be helped by electric stimulus. And what have we to look to in our *Materia Medica* that will accomplish like good results with less damage to the organism as a whole? What can

you apply or introduce that will reach the offending spot with as much precision, or do less damage by its presence while it gives the needed help? It certainly adds energy where energy is wanting, and when its work is done, it leaves no *débris* behind to clog the further working of the part.

SEDATIVE ACTION.

As a temporary *sedative* both the induced current and the anode of a mild, continuous current are of service. They calm the neuralgic pains of many functional and organic disorders; they relieve headaches due to congestion or migraine; they allay the pains of muscular rheumatism, of pleurodynia and painful menstruation, and the lightning-like pains so common in locomotor ataxia are often more promptly and permanently controlled by this than by any other means. The manner of action through which this effect is brought about by the electric current is open to speculation. It may be in one of a variety of ways; by subduing a congestion which is the cause of the pain; by stimulating absorption or elimination of some deleterious effete substance; possibly by hastening the decomposition of an irritating product which is formed as the result of imperfect or misplaced metabolism; or the purely physical influence of vibrating movement induced in the nerve structure may account for the soothing effect. Whatever it may be, the calmative influence of these methods of electric application is daily exhibited in a great variety of painful affections, and sufferers of all ages and temperaments bear grateful witness to its efficiency in affording them relief.

ELECTROLYTIC ACTION.

The electrolytic action of the continuous current—that is, the power it has to bring about chemical decomposition and change the atomic arrangement in the composition of compound substance—is credited with very important therapeutic effects.

Electrolysis, by freeing the acid constituents of the tissues at the anode, and the alkaline at the cathode, is a con-

venient means for promoting styptic or caustic action, which can be readily applied and accurately limited, and has of itself a wide range of application in the diseased body. But if, as is claimed, it can be proved by actual experiment or from clinical data that all tissues lying between the rheophores of a continuous current are directly modified in nutrition or vital action by its influence, according to the quantity or intensity of the current, who is there so rash as to attempt, in this the infancy of the rational use of electricity as a therapeutic agent, to mark out the limitation of its powers? No matter where, upon or within the body, disease has begun its havoc, the continuous electric current may be made to traverse the part and work such change as comes within the province of its powers. What these powers are over living tissues the physiologist and clinician must determine, but may it not be, with some reason, anticipated that normal tissue will be found to be stimulated to more vigorous action and resistance by its aid, while abnormal processes are checked and substances foreign to the part, as effete matters or germ colonies, will be found unable to withstand the additional energy of this opposing force. If such change can be proved to be wrought by this mysterious agent in the secret laboratory where cells and blood carry on their incessant interchange in harmony or discord, then no one will deny that, in the continuous current, we have a therapeutic agent which, for many disorders within the realms of both medicine and surgery, surpasses all other means at hand, and testimony in medical literature is accumulating in such abundance and from such high sources, as the result of accurate methods and critical observation, to the effect that herein we have a resource which will *cure*, where hitherto we have only been able to *destroy* the part affected, that it challenges investigation, if not adoption, by every member of the profession.

CATAPHORIC ACTION.

The cataphoric action of the continuous current gives promise of aiding us materially in many ways. The introduction of medicinal agents into the body through the skin

is oftentimes desired, and any method that will accomplish this with greater certainty than those now in use will be a valuable acquisition. The discovery of lanolin as an excipient for remedies applied by inunction was a great advance. But if, by employing the anode of the continuous current, we can hasten this process of absorption and cause medicines to penetrate the cuticle and thus reach directly the offending tissues, it will, in many instances, be of great service. This power to increase or reserve osmosis which the continuous current is said to possess will, if true, have abundant duties assigned to it in the removal of dropsical effusions from cellular tissues, joints and cavities. The contributions of Munk, Von Bruns, Corning, Peterson and others have furnished us with much interesting information on what they claim is the cataphoric action of electricity in carrying remedies and anæsthetics through the skin, and it has even been suggested by a well-known and highly esteemed surgeon in a recent article "that the principle of the process that causes absorption or diminution of the bulk of an uterine fibroid treated in this manner (*i.e.*, by the constant electric current), must be looked for in some form of electrical osmosis."

CAUTERY ACTION.

The advantages offered by the galvanic cautery over any other surgical procedure are chiefly found in the removal of growths of vascular or fungus character, or in arresting the progress of ulcers and malignant diseases in passages of the body narrow and remote from the surface, like the nasal fossa, the eustachian tube, the pharynx, larynx and external auditory meatus, the bladder, urethra and uterus. By this method the cautery snare or knife or scoop may be nicely adjusted to the necessities of the case, and when all is in readiness the heat is generated in the cauterizing tip, with the definiteness of application and range of intensity perfectly under control. In skilled hands its action is perfect, and for such cases all other methods of treatment are but bungling substitutes.

Let us briefly enumerate a few of the results attained by electricity, which have directly advanced the science of medicine and surgery. The physiologist, by the discovery of the laws of electro-tonus, has made it possible for us to determine the condition of a paralyzed muscle, thus greatly advancing the accuracy of diagnosis after injury or disease of brain, or cord, or nerve.

For the increase of our knowledge of *cerebral localization*, with the marvelous results in *cerebral surgery* which have followed so rapidly in its train, we are almost wholly indebted to the electrical experiments upon the brains of animals by a host of investigators. As a remedial agent it is claimed that—

It restores the action and increases the growth of paralyzed parts.

It arouses vital action.

It improves nerve conductivity.

It contracts muscle.

It hastens osmosis and absorption.

It excites secretion.

It quickens the circulation.

It aids elimination.

It allays pain.

It makes hypodermic medication possible without puncturing the skin.

It destroys superfluous hairs, removes warts, moles, sebaceous cysts and epitheliomas.

It checks the ravages of lupus and other ulcers.

It heals bed sores.

It arrests keloid growths.

It dissolves away cicatrices in the skin and along mucus channels forming structures.

Thus, Stricture of the lachrymal duct.

“ “ eustachian tube.

“ “ œsophagus.

“ “ os uteri.

“ “ rectum.

“ “ urethra.

are all amenable to this treatment.

"Not long ago, physicians and surgeons of repute flouted the treatment of urethral strictures by electrolysis. Now it is so generally and successfully practiced that scarcely any oppose it."¹ . . .

"There is no comparison between the treatment of strictures of the urethra by the ordinary methods and its treatment by electrolysis. Should the permanency of the good results prove to be, as a rule, not so great as those recorded, still the calibre of the stricture remains enlarged for a longer space of time than after any other form of treatment."²

Like testimony from reliable sources as to its superiority over all other methods for the relief of strictures and the disorders consequent upon them in the other localities named is not wanting.

It coagulates the blood in aneurisms, nævi, and varicose veins.

Dr. John Duncan, surgeon to the Edinburgh Royal Infirmary, declares: "I have no hesitation in saying that the only justifiable method of treatment for cirroid aneurism is electrolysis."

We all know the claims of Apostoli and his followers for the treatment of uterine fibroid-myomata by electrolysis, and it needs but be said that larger experience and improved methods have but confirmed and rendered more positive his earlier view, *i.e.*, that it is a method for treating the majority of cases superior to all others, and in this he is ably backed by Keith and numerous lesser lights. Keith's latest conclusions are thus stated in his own words:

"This treatment *almost always* relieves pain. It *almost always* brings about diminution of the tumor, sometimes rapidly. It *almost always* stops hemorrhages, sometimes rapidly. The results are *almost always* permanent, and the

¹ Electrolysis in the Treatment of Urethral Strictures. *New Eng. Med. Monthly*, Dec., 1889.

² W. E. Stevenson. M.D. Wood's Monographs. "Use of Electricity in Surgery."

growth of the tumor, if it be not lessened, is stopped. The general health is *immensely improved*. By *almost always*, I mean *nineteen cases out of every twenty*."³

The prostate gland, homologous in structure with the uterus, and subject to like abnormal growth, has proved a perplexing problem when enlarged. Both physician and surgeon have expended upon it their best endeavors with but small reward; but some encouragement may now be held out to the sufferer and his physician, for recently it has been said, by one whose experience and opportunity for observation give weight to his words, "We have no hesitation in defining this as the only truly remedial treatment known for the hypertrophy of this gland in *restoration of its function*, operative procedure looking, as is evident, to its greater or lesser destruction."

Such an array of victories claimed in the name of electricity demands of the profession proof or disproof.

But how are we to go about separating truth from error in these claims, and by what means can we determine with accuracy the limitations and capacities of this powerful force in nature for the treatment of disease? Hitherto we have, for the most part, acted like children in our dealing with the matter, for, with medical batteries as heterogeneous in their variety and construction as the weapons of our revolutionary forefathers in their first contests with the king's regulars, we attempted a crusade against the hidden mysteries of disease with a force, in its essence powerful, it is true, but hampered by our ignorance and the conditions under which we sought to operate it. No wonder that failure in cure followed such crude application, and that rumors of better results were met with incredulity.

We believe that we are about to enter upon a more thoughtful age, and are now, as a profession, prepared to soberly seek out and conform to those conditions which are indispensable for determining the effects of this all-prevailing force on the human body, both in health and disease.

³ *British Medical Journal*, Feb. 14. 1891.

THE FIRST REQUIREMENT.

The first requirement for a rational electro-therapeutist is, that he who undertakes to practice it, should be well drilled in electric physics and physiology.

In no branch of practical medicine and surgery can a knowledge of the natural science be safely ignored, but nowhere is such knowledge so indispensable to success as in the practice of electro-therapeutics, and yet how many of our medical colleges demand even an elementary training in physics as a condition for entrance? And how few furnish any instruction worthy of the name in the regular curriculum.

How many physicians who are daily making use of electricity in their practice could explain the construction of the apparatus they are employing, or the conditions it must comply with in order to generate a current? I have known a physician in high standing, a professor in a medical college, to use a galvanic battery of simple construction for a period of three months in making daily applications to a patient, and during that entire time there was no current passing through the conducting cords, he having failed to join the proper connections. And such mortifying instances, discreditable to the profession, could be related *ad nauseam*.

One who makes use of an electric battery should be as familiar with its construction and action as an oculist with his ophthalmoscope, or an engineer with his engine; but how many expensive batteries do we see lumbering up physicians' offices, useless and set aside because of a corroded connection or a broken wire! It is, perhaps, fortunate so many accidents do happen to medical batteries, for electricity is a dangerous tool in the hands of one who knows so little of the conditions upon which its action depends.

Hand in hand with ample knowledge of electro-physics should go a familiarity with the action of electric currents on the normal living tissues. The laws of electro-tonus; the effects peculiar to the anode and the cathode; the variation in resistance of different tissues, all are essential factors in the information requisite to an intelligent use of electricity in therapeutics.

Practical demonstrations and practical experience in electro-physiology as laboratory work under competent instructors, can alone fit the student for practicing intelligently this occult science. As reasonably might the physician, or he who dignifies himself by that title, attempt a cure by dealing out unknown drugs from his medicine case, as to use electricity on his patients without such antecedent preparation.

THE SECOND REQUIREMENT.

The second requirement for securing a rational, scientific position for electricity among therapeutic agencies is a uniformity in the means employed for its application to the body.

We have, at present, no less than fifty manufacturers of electric batteries and appliances for medical use and no two of them have adopted the same pattern or means for generating currents. On the contrary, trade enterprise has stimulated inventive ingenuity to produce diversity rather than uniformity in order that it might be made an additional argument for the sale of that particular variety of instrument. Many physicians in this, as in many other therapeutical measures, take suggestions from non-medical men as to what instrument they require and how their patients should be treated. Those members of the profession who have, from personal experience, discovered the essentials of a medical battery, rather than the instrument maker, should be looked to for information as to what are the best and most suitable forms of batteries for therapeutical purposes. Some standard should be adopted for a constant current battery, an induction coil, volt meter and a milliamperemeter.

It is rare if any two physicians at the present time who daily employ electricity in their practices do it in like manner. They cannot, therefore, compare results, since they are not assured that in the treatment of similar diseases they have subjected their patients to the same conditions. Should I, in Michigan, wish to test upon my patient the effects of electric treatment claimed by a fellow practitioner

in New York or elsewhere to be successful, how can I know that my "McIntosh" is furnishing the same current that he used from his "Kidder," since our milliamperemeters have never been compared, and the voltage and resistance are not reported.

Recently, effects have been reported in a prominent journal by an eminent electric therapist as having been brought about by the use of the induction current. That seems to me incredible, but am I justified in denying his statement until I know what form of instrument he made use of, and have myself used the same in like manner and so determined the inaccuracy of his conclusions?

Nothing differs more than the intensity of the currents generated by induction coils; therefore, without a standard instrument, which is the same wherever used, no progress toward uniform results can be made. Until within a few months, there has seemed to be no way open for securing this much-desired harmony and uniformity in electro-therapeutical appliances, but the organization of an *American Electro-Therapeutical Society*, in January last, gives promise of better things, and may we not hope that, through the labors of this organization, we will soon receive definite instructions as to the best instruments to make use of, and the best methods for applying them.

In this connection, let me suggest that the tendency should be toward the simplest and least expensive instruments consistent with efficiency. Many of the obstacles to the progress of electro-therapeutics have arisen from the high price, complexity and frailty of the instruments furnishing the current.

One drawback, and that perhaps the most fruitful in retarding good work, lies in the use of fluid batteries for generating both constant current and the primary circuit for induction currents. Many of the annoyances arising from this source, such as the deterioration of the fluids, the consumption of the elements when the battery is not in use, the corrosion of the connections in the circuit, can now be overcome by using a dry cell. I have for months made use of a dry cell for running induction coils, and found it

very satisfactory. You who have occasion to use portable batteries can readily appreciate the advantages to be derived from substituting a dry for a wet cell in all portable machines. Even for stationary work the dry cell is superior on account of its cleanliness, but in matter of durability it requires some improvement.

Nothing, in my opinion, will eventually be found so convenient for office work as the use of commercial currents.

The Edison incandescent current, with its constant voltage of near 110, affords an admirable source of electric power for electrolysis, cataphoresis, inductive stimulation, and cautery purposes. By a very simple appliance for changing the voltage, I have used this current in my office for more than two years, and the same method applies quite as well to the currents of equal or less voltage from other sources, whether they be alternating, as the Thomson-Huston dynamo, the storage battery, or any form of primary battery plant that has sufficient electro-motive force.

To sum up, therefore, the ideal conditions for establishing electro-therapeutics on a scientific basis, they are :

1st. A thorough preparation in electro-physics, physiology and therapeutics on the part of the operator.

2d. A *source of electric power*, as a dynamo or storage battery with a constant, unvarying voltage, from which the current is conveyed to hospitals, physicians' offices or patients' houses.

3d. A *current regulator*, rheostat or modifier by which the strength of the current may be adapted to the required needs of individual cases, and this should be of convenient size, durable in construction and simple in arrangement. The simplicity, economy and efficiency of such appliance would insure its being readily adopted by the profession.

4th. A *series of electrodes*, which should be constructed according to a fixed standard as to size and shape, and they should be made of material which is cheap, readily conducting and non-polarizable.

5th. All should make use of a *standard milliampèremeter* for determining "strength of current," and a *colombmeter* for "quantity" or dose.

Complying with such conditions as these, progress in determining the limitations of electricity as a therapeutic agent would advance with rapid strides. The incandescent electric light plants, with low electro-motive force, are very common throughout the country. The physician and dentist finds the current extremely useful in his office. It illuminates his apartments, it runs his motors, it lights the tiny lamps with which he explores the cavities of the body, it heats the water for his sprays and douches. It will not be long before it will be made use of by the many, as it has been by the few for some time, for all the applications of electricity to the human body, since it does away with a host of difficulties that have, up to the present, been of such magnitude as to make electric applications either a burden or a farce.

HYOSCIN POISONING.

As this drug is used so frequently in the treatment of psychoses, any information in regard to its action is always received with favor. Dr. Adler, in the "Centralblatt f. Nervenhe.," reports a case of accidental poisoning with muriate of hyoscin. The exact quantity of the drug taken was not known, but the amount was supposed to be more than fatal, as it stood in a glass as a sediment in which a drink of water was taken by mistake. Fifteen minutes after it was swallowed dizziness came on, with gradual loss of consciousness. In an hour convulsions became general, followed by coma. The face was livid, pupils dilated and fixed, pulse 145, very small and soft. The stomach pump was used, but no hyoscin could be detected in the fluid. Hypodermics of morphia were given, but the spasms continued. Five hours later an injection of pilocarpine was given with no reaction resulting for three hours, when moisture began to appear on the lips and tongue. From this on the recovery was gradual. In eight hours after the ingestion of the drug the patient was able to speak, the pulse to fall, and convulsions to cease. By the following morning all that remained of the trouble was a slight weakness and some accommodation paresis. B. M.

MEDICO-LEGAL INVESTIGATION OF DEATHS BY VIOLENCE IN MASSACHUSETTS.

BY SILAS D. PRESBREV, M.D., Taunton, Mass.

IN 1877 the Legislature of Massachusetts passed "An Act to abolish the office of Coroner and to provide for Medical Examinations and Inquests in cases of Death by Violence." By the terms of this Act the County Commissioners in each county, except that of Suffolk, were called upon to "divide their several counties into suitable districts for the appointment of one medical examiner in each district;" and such examiner, while appointed from a district, has the power to exercise his function in any part of the county of which his district is a portion. In practice, however, an examiner does not act in the district of another except in case of absence or disability of the latter. Examiners hold office for seven years and are appointed by the Governor by and with the advice of the Council.

The thirteen counties were divided into sixty-eight districts, according to the distribution of centres of population in each county. The usual number of districts is four, but some counties have more and some less than that number. Each examiner is sworn and gives bonds with sureties in the sum of \$5,000 to the treasurer of the county, conditioned for the faithful performance of the duties of his office. Every medical examiner is required annually, on or before the first day of March, to transmit to the Secretary of the Commonwealth certified copies of the records of all deaths which have occurred during the previous year, the cause and manner of which he has officially investigated. For this purpose blank books for records and blank forms for returns are supplied to each examiner. A small fee is allowed and paid by the Commonwealth for these returns as is done for the returns of births. These returns are bound and indexed and preserved for reference, and from

them are prepared and published by the Secretary of the Commonwealth such tabular results as will render them of practical utility.

The work of the examiner may be best studied under the following heads: (1) Notification; (2) View; (3) Autopsy; (4) Records; (5) Fees; (6) Inquest.

(1). Notification.—Examinations under this law are made “upon the view of the dead bodies of such persons only as are supposed to have come to their death by violence;” and “whenever a medical examiner has notice that there has been found, or is lying within his county, the dead body of a person who is supposed to have come to his death by violence, he shall forthwith repair to the place where such body lies and take charge of the same.”

There is nothing in the law to indicate what shall constitute official notice. According to the theory and practice, any responsible person has such authority, and the intent of the law, it is to be presumed, was to allow the broadest liberty in the notification. As a matter of fact, the calls usually come through the police in cities, the selectmen or their representative in towns, the officers of corporations, the undertakers, some member of the family of the deceased, the person finding a body, or possibly, though not frequently, notice may be given by some neighbor or enemy even, of the deceased who is inclined to be suspicious or desirous of settling some old score by instituting investigation. The last motive is rarely successful, since, almost without exception, the services of the examiner are welcomed by the unfortunate family.

The question, Shall an examiner ever refuse to make a view? has been discussed by the examiners, and the general opinion is that he should not refuse, unless there has been a misapprehension of the condition under which he is required to exercise his function. It is not sufficient to say that one died without medical attendance; the idea of suspected violence must enter into the case. The boards of health of cities and towns are authorized to give certificates of the cause of death in cases of uncertified deaths, not suspected of violence. Not infrequently the examiner is con-

sulted by undertakers, sometimes by town officers, to learn whether a certain dead body should be the subject of official view, and the answer turns entirely upon the question of the possibility of anyone supposing that the death may have been caused by violence. If there be such a reasonable possibility, it is undoubtedly a case for view.

(2). View.—Having been notified, the examiner is required by law forthwith to repair to the place where the body lies and to take charge of the same. He now makes a careful view of the body, with such accuracy as to enable him to say whether or not the body shows any marks of violence and especially any marks sufficient to indicate the cause of death. For this purpose, the usual custom is to have the body entirely naked and to make careful inspection of every part. He also makes personal inquiry into the cause and manner of the death, if anyone can be found who can give information. Under some circumstances a careful investigation of the surroundings of the body becomes important evidence in the investigation. All the facts learned in this search are to be accurately recorded.

If, upon this view and inquiry, the examiner is convinced that the death was not caused by violence, he will deliver the custody of the body to the friends of the deceased, if there be such. In case the body is not claimed or is unidentified, it is to be kept in his custody for forty-eight hours and then delivered to the overseer of the poor of the city or town wherein it is found lying. In case the body is not identified a careful description of the deceased is to be made. The examiner is next to certify to the clerk or to the registrar of deaths the name or description of the deceased, together with cause and manner by and in which he came to his death. And here the investigation may end.

If, on the other hand, the examiner is convinced that the death was caused by violence, and he is able to determine without further examination the cause and manner of the death, he will certify as before to the registrar, and also notify the district attorney and a justice of the district, police or municipal court for the district or city in which the

body lies, that there has been within the district a death by violence in the meaning of the law.

(3). Autopsy.—If the examiner is unable to determine satisfactorily the cause of the death without autopsy, and he deems a further examination necessary, he shall so report to the district attorney, or to the mayor, or to the selectmen of the district, city or town where such body lies. Any of these officers may authorize him in writing to make an autopsy, but he can make no autopsy officially without such authority. Before proceeding to make an autopsy, he shall employ two or more discreet persons, one or more of whom may be physicians, and shall first call their attention to the position and appearance of the body, and in their presence shall make an autopsy of sufficient thoroughness to establish fully the cause of death or to establish the fact that the cause cannot be learned by autopsy. The examiner, if he deems it necessary, may employ a chemist to aid in the examination of the body, or of substances supposed to have caused or contributed to the death.

(4). Records.—The examiner, or a clerk whom he may employ, shall reduce to writing at the time of the autopsy every fact and circumstance tending to show the condition of the body and the cause and manner of death, together with the names and addresses of the witnesses, which record the examiner shall subscribe, and which is known as the record of the autopsy. A duly attested copy of the record is filed with the district attorney, and another with the justice of the district court, together with a certificate of a death by violence above described.

If a medical examiner is of opinion that a death was not caused by violence, and the district attorney or the attorney general is of a contrary opinion, either the district attorney or the attorney general may, notwithstanding such opinion, direct an inquest to be held, at which he or some person designated by him shall be present and examine all the witnesses.

Since the action and opinion of the medical examiner turns wholly upon the question of violence, it becomes very desirable that the term violence be exactly defined; and

yet, as in the case of notification, the law not only does not define it, but seems to use it in its broadest sense, if not indeed in differing senses. But since it is the object of the investigation to learn if any other person than the deceased has been either directly or indirectly causative of the death, it is fair to consider that the violence which is to be officially reported is a violence that may have been contributed to by the act or by the neglect of another. All cases of death by accident upon a railroad are, by special provision, to be reported for inquest, and the district attorney or attorney general may, if he deems it necessary or expedient, direct an inquest to be held in the case of any other casualty from which the death of a person results.

(5). Fees.—In the county of Suffolk the examiners are paid annual salaries for all services performed. In all the other parts of the State examiners are paid fees are follows: For a view without an autopsy, five dollars; for a view and autopsy, thirty dollars; and for travel, at the rate of ten cents a mile to and from the place of view. The bills for services are rendered quarterly to the county commissioners, who certify their correctness when the fees are paid by the county treasurer. In case of autopsy, however, there must accompany the bill the certificate of the mayor or of the selectmen who authorized the autopsy, and a statement from the district attorney certifying that the autopsy was in his opinion necessary. In order to enable the district attorney to make this certificate the examiner is required in every such case to file with the attorney together with his report of the autopsy an account of his view and personal inquiry in the case and shall certify that, in his judgment, the cause and manner of death could not be ascertained by view and inquiry, and that an autopsy was necessary for that purpose.

At this point the official relation of the examiner as such ceases, though he may or may not be employed as a witness at the inquest or at the subsequent trial, if one follows.

(6). Inquest.—In case the examiner has notified, as above described, the justice of the district court that there has been a death by violence, the justice is required to hold an

inquest, and is allowed no discretion in the matter except as to the time and place of such inquest. At this hearing, such witnesses as have been found to have any knowledge of the facts are summoned to testify, and the district attorney or some person designated by him may attend the inquest and examine all the witnesses. In practice, the judge himself usually examines the witnesses.

After hearing the testimony, the justice is required to draw up and sign a report in which he shall certify when, where and by what means the person deceased came to his death; and if it appears that his death resulted wholly or in part from the unlawful act of any other person or persons, he shall further state the name or names of such person or persons if known to him, and he shall file such report with the records of the Superior Court in the county wherein the inquest is held. The law further allows the justice to bind over such witnesses as he may think best, and requires him to take the necessary steps for the apprehension of any person or persons charged in his report with the commission of an offence.

Thus have I endeavored to describe to you the method of medico-legal investigation of deaths by violence that has been practiced in Massachusetts since the abolition of the office of coroner, and naturally the question may arise, What has been gained by the change? In answer I will call your attention to a few of the points of gain. First, the expense, which to many minds is of the first importance in matters of public concern, has been diminished about one-third. Second, promptness in action and exactness in investigation have been accomplished. Third, all the facts of the case from the first discovery of the body to the finding of the justice are matters of accurate record and are material as evidence in case a trial follows the inquest. Fourth, the duties are so divided that the man of medical training investigates so much of the case and only so much as has to do with the medical question of the cause and manner of the death, while the man of legal training settles the question of responsibility and determines whether or not a crime has been committed, what the nature of that

crime, and, if possible, who is the suspected criminal. Fifth, the records in the hands of the Secretary of the Commonwealth constitute a valuable body of observed facts that may become of great value to the student of legal medicine. Last, the association of medical examiners, constituting the Massachusetts Medico-Legal Society, has stimulated each examiner to keep himself well informed and as far as possible prepared for any case that may fall to his lot. And in general the diffusion through the State of a number of physicians specially interested in medico-legal research has tended to call the attention of physicians to that branch of medical study, and has had an influence to improve the grade of medical testimony in the courts of the Commonwealth.

HYPNOTISM IN THE ARGENTINE REPUBLIC.

The National Board of Hygiene has adopted the following resolutions, published in "*Anales del Departamento Nacional de Higiene*," for May, 1891.

1. Prohibiting the representation of hypnotism and suggestion in the theatres and other public places.

2. Only those authorized by our board to practice the healing art may apply hypnotism in the practice of medicine, never daring to hypnotize an individual without his consent, or against the wishes of his parents or other interested personages; the physician shall be responsible for any injurious effects caused by such hypnotization, providing that after an examination by two members of our board and two neuro-pathologists, they shall decide that a contra-indication for hypnotism existed or the physician was ignorant of the operative technique.

3. Prohibiting the employment of hypnotism to every person not legally authorized to practice medicine.

4. The physician is prohibited from making suggestions without the patient's consent, or in case the latter is unable to deliberate himself, then the consent of the parents or tutor is necessary, in every case explaining the curative results which he proposes to obtain; furthermore, he shall abstain from provoking sad, painful or horrible suggestions.

5. Transgressors will be punished according to the law which regulates the practice of medicine.

W. C. K.

CHOREA IN THE AGED—THE REPORT OF A CASE.*

By FRANK R. FRY, A.M., M.D.,

St. Louis.

Professor of Diseases of the Nervous System, St. Louis Medical College.

CHOREA is rarely met with in adults, especially in persons over twenty-five or thirty years of age.

Rare cases occurring in old persons have been remarked from time to time with much interest.

Before presenting my notes of a case of simple chorea in a woman 69 years of age, permit me briefly to mention, without attempting to discuss at any length, the leading features of chorea in the adult and the aged.

Very apparently these cases demand to be arranged in several groups or classes. To begin with, there is the class to which the case I am about to report belongs; cases of what may be called simple chorea, differing in no essential particular from the disease as seen in young subjects. In this form the disease is curable, or at all events, lasts a comparatively short time. It is unaccompanied by evidences of coarse lesions of the central nervous system, and is not hereditary in the proper sense of the word. Such cases are very rare.

In another class of cases the chorea is accompanied by symptoms, appearing sooner or later, which reveal the presence of coarse cerebral lesions. The question has been raised upon the propriety of calling the choreic movements which appear in the course of such cerebral disease by the name chorea. I shall not stop to discuss it here, but simply observe that often the movements are in themselves indistinguishable from so-called simple chorea, and that the name has been habitually applied to them by prominent

* Read before the Missouri State Medical Association, May 20, 1891.

writers for many years. This class of cases has been divided into two sub-groups, according as the cerebral lesions are sub-cortical or cortical. Sometimes it is practicable, and to the neurologist especially, of much diagnostic interest, to make the distinction.

There is another form of chorea with which aged persons are occasionally found afflicted. I refer to the malady now generally known in neurological literature as chronic hereditary chorea, a disease of such striking character that I shall not attempt to describe it here at any length, but refer you to Dr. Wharton Sinkler's article in Vol. V. of *Pep-
per's System of Medicine*, where are collected the accounts of it from various sources which have established its identity as a peculiar and wonderfully interesting affection. So far as the movements are concerned, they are often those of ordinary chorea. It appears in a marked hereditary manner in certain families. The subjects of it are rarely attacked until toward the middle of life. They never recover, and they frequently become insane. In some instances they live to old age; hence I merely mention it as one of the forms of chorea which may be found in old subjects.

Mrs. Bernhardt Metzger, aged 69 years and eight months, in humble but comfortable circumstances, living at 808 Geyer Avenue, St. Louis, I first examined February 1, 1891. She was affected with a chorea so characteristic as to be diagnosticated such at a glance. The muscles of the right side of the body only were involved—a right hemichorea. The face, tongue, neck, upper and lower extremities were markedly involved; the muscles of the trunk, including those of respiration, only slightly. When sitting or lying, the whole lower extremity was thrown hither and thither with much force. She constantly held the right wrist in the opposite hand, thereby restraining to some extent the movements; when it was disengaged, however, the movements were about as severe as those of the lower extremity. The back of the wrist and hand were quite sore from sharp raps against hard objects received in consequence of the excessive and uncontrollable muscular action. Speech was indistinct on account of the involvement of the lips and tongue. There was a marked hebetude, an inability to appreciate the force of questions asked her,

and an indifferent manner in answering them. However, she complained of feeling very weak, of dizziness when she raised her head, and pain in the top of it. The members of the family informed me that during the past few nights she had been slightly delirious, and even to some extent during the daytime; that she was sleeping very poorly, and getting but little rest night or day. The pulse was 110, feeble, irregular and intermitting, three or four times a minute. The temperature in the axilla was 102° F. She had a rather acute coryza and a troublesome cough. I found that these more acute symptoms had appeared four days ago and had abated none since. As nearly as could be determined, the choreic movements had begun at least two weeks prior to this time. The first evidence of them was a slight "nervousness" in the right hand; this constantly increased in severity, gradually extending to the other parts involved, and was now as severe as it had ever been. I was informed by the son and daughter, both of whom lived in the family with her, that for several weeks prior to the appearance of the chorea she had been in poor health, complaining of general weakness, of dizziness and headache. She had also become very irritable and notional, quite unlike herself. They had felt considerable anxiety about her condition, and had called a physician, who had visited her several times.

I came to the conclusion that besides the chorea the patient was suffering an attack of epidemic influenza, or la grippe, then prevalent in the community. In the presence of the acute attack of this latter disease, I felt it impossible to determine whether there was important cerebral trouble. I prescribed phenacetine and a dose or two of bromide at night, and made arrangements for the methodic administration of nourishment and stimulants.

Feb. 5th. The patient had been kept in bed since my first visit. (Prior to then she had been frequently up, trying to walk about and to sit in a chair.) The temperature was normal, the pulse slower and stronger, the mental and general condition much better. She had obtained a fair amount of sleep and rest. The choreic movements were somewhat less severe. I began the administration of Fowler's solution in three-drop doses, to be gradually increased, prescribed a laxative, and continued the bromide at night.

Feb. 12th. Patient taking six drops of the Fowler's solution t. i. d. Still improving. A dynamometric test showed the grip of the right hand to be about ten per cent. less than that of the left. There were also evidences of

lessened muscular power in the lower extremity of the same side.

Feb. 20. The patient has been taking eight drops of Fowler's solution for the past three days. She bears the remedy well, and is still improving. Marked abatement of the chorea.

March 2. Much improved in all respects. Choreic movements slight. Has been taking eight drops of Fowler's solution since Feb. 17th, or for about two weeks. Dose reduced to four drops. Prescribed iron and strychnine in small doses.

March 16. No trace of choreic movement. Discontinued the arsenic. (The chorea had existed for about seven weeks.)

April 15. The patient and members of the family agree that she is in better health and spirits than she has been for many months past. Appetite and strength are good, and she is sleeping well. Examination by the dynamometer showed the grip of the right hand about four per cent. better than that of the left. The heart intermits from two to three times in two minutes. There is no murmur; none was detected at any time during the attack.

At this date I renewed my inquiries into the personal and family history. Although never very robust, she had not had a severe illness since childhood. She had never had an attack of chorea previously, nor anything similar to it. She had never had an attack of rheumatism, although of late years she had occasionally had slight aches and pains in some of the joints, especially the shoulders, and in the muscles of the extremities. The family history is unimportant so far as obtained. I could get no account of a case of chorea or other pronounced neuropathic trouble in any of her blood relations of whom she had any knowledge. However, I have had under treatment her son, who is a neurasthenic of a type generally found in families with a neuropathic tendency.

REMARKS.—The practical difference between the class of cases to which this one belongs, and the other forms mentioned above, is that the former recover, and the latter do not; hence the interest attaching to the diagnosis. In this case the similarity of the attack to those commonly observed in young subjects is remarkable in several respects: a prodromal stage of general disturbance to health, with mental irritability; a gradual onset of the movements; a

rapid improvement and complete recovery within a few weeks with the administration of arsenic; a paresis of the involved parts, not infrequently to be found in cases of ordinary chorea when carefully examined. Yet the occurrence of these symptoms in an old person should lead one to hesitate in reaching a conclusion. It is true that the chorea found in adult and old subjects with a hemiplegia generally follows the paralysis, but the fact that it sometimes precedes the paralysis is a matter of record; *i.e.*, there are recorded cases where in post-mortem examination there have been found gross subcortical lesions (patches of softening in the vicinity of the motor portion of the internal capsule) which had produced a hemiplegia, the hemiplegia having been preceded by a hemi-chorea. It is also a fact that persisting hemi-chorea, the result of such gross lesions, has been found to exist in the absence of a hemiplegia. With these facts in mind, it is apparent that the discovery of a hemiparesis in our case tended to obscure the diagnosis until both the paralysis and chorea had disappeared, or, at least, until they were rapidly disappearing.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

*From the Swedish, Danish, Norwegian
and Finnish:*

FREDERICK PETERSON, M.D., New
York.

From the German:

WILLIAM M. LESZYNSKY, M.D., New
York.

BELLE MACDONALD, M.D., New York.

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:

JOHN WINTERS BRANNAN, M.D., New
York.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo,
N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport,
Mass.

*From the German, Italian, French and
Russian:*

F. H. PRITCHARD, M.D., Norwalk, O.
ALBERT PICK, M.D., Boston, Mass.

From the English and American:

A. FREEMAN, M.D., New York.

From the French and German:

W. F. ROBINSON, M.D., Albany.

PATHOLOGICAL.

THE MEDIAN POSITION OF THE VOCAL CORD IN PARALYSIS OF THE RECURRENT LAR- YNGEAL NERVE.

There have been many attempts to account for the median position assumed by the vocal cords in the early stages of recurrent laryngeal paralysis. R. Wagner, under the guidance of Exner, has recently made a series of experiments in the endeavor to solve this question. An abstract of his work, originally published in "Virchow's Arch.," Bd cxx., H₃, is given in the "Medicinische-chirurgische Rundschau," of April 1st. He first resected the left recurrent laryngeal nerve in cats, then sewed up the wound and kept the animals under constant laryngoscopic observation.

In every case the left vocal cord assumed the median position immediately after the operation, remained so from two to four days and then passed into the cadaveric position. If both recurrent nerves were resected, the glottis closed

and death followed. Wagner concludes from the above that the median position cannot be brought about by the muscles which are innervated by the recurrent nerve.

If, immediately after the resection of one recurrent nerve the superior and middle laryngeal nerves of the same side were also divided, then the median position changed at once into the cadaveric position. Hence it follows, according to Wagner, that the median position of the vocal cord in paralysis of the recurrent nerve is caused solely and entirely by the cricothyroid muscle.

He reserves for another communication, the explanation of the fact that the median position changes to the cadaveric position in the form of paralysis under consideration.

J. W. B.

THE PATHOLOGY OF PARALYSIS AGITANS.

The "St. Petersburg med. Woch." publishes an addition to the literature, on this subject, by Dr. von Sass. His case was that of a woman, seventy-one years of age, who had suffered from muscular tremor for about twenty years. There was nothing unusual about the case except an increase of the tremor during voluntary movements, a condition which obtains occasionally in the last stages of the disease. The microscopic examinations of the cord showed a partial obliteration of the cerebro-spinal canal, and an abundance of corpora amylacea, at all sections. With the exception of these changes, and that of some slight artero-sclerosis, no further morbid change was found in the cord. An examination of the peripheral nerves and muscles revealed decided alterations. There was considerable thickening of the peri- and endo-neurium in and around the brachial plexus, a diffused proliferation of connective tissue with increase of nuclei, atrophy and partial appearance of nerve fibres, coagulation of myelin, and finally thickening of the blood-vessels. In the regions examined the muscular fibres had everywhere undergone atrophy, the sheaths being crowded with nuclei. As it is not the rule for either the peripheral nerves or voluntary muscles to be considered or examined in this disease, the author suggests that possibly such investigation, systematically conducted, might disclose a peripheral cause to account for more of the symptoms than is generally supposed. He thought the neuralgic pains that frequently preceded the tremor might be due to actual neuritis.

B. M.

ACUTE MALIGNANT HYDROPS.

In the March number of "Anales del Circulo Medico Argentino," Dr. Lucio Melendez draws attention to the frequency of this affection in his country, and makes a comparison between it and beri-beri.

"Beri-beri is endemic in India and the warm countries of South America. All cases occurring in our country are due not to spontaneous generation, but to transportation.

Beri-beri is considered by many as infectious. Malignant hydrops, although of a similar nature, is not quite so infectious.

Beri-beri affects all, without distinction to color, race, temperament, or preëxisting disease. Malignant hydrops attacks exclusively the insane, and especially the chronic demented, and filthy.

In beri-beri we meet varieties with paralysis.

In hydrops paralysis is never noted.

In beri-beri disturbances of the gastro-intestinal tract are of frequent occurrence.

In hydrops there is neither emesis nor diarrhœa; the appetite is preserved, the tongue is clean and moist, and the bowels are prone to constipation.

In beri-beri the progress is rapid and fulminating.

In hydrops the progress is slow, never fulminating.

Beri-beri attacks many persons in a short space of time.

In hydrops I have seen but eight to ten persons per month in an epidemic which lasted five months." W.C.K.

MULTIPLE SCLEROSIS IN CHILDREN AND ITS
RELATION TO ACUTE INFECTIOUS DISEASES.

The "Kinder-Arzt," of June, contains an abstract of a paper published by A. Nolda, in the "Correspbl. f. Schweizer Arzte," No. 5, 1891, on the above subject. Twenty years ago, according to the author, multiple sclerosis had never been observed in childhood. Schule, P. Marie, L. Unger and Ebstein then published cases of the disease in children. Later, Ebstein and Westphal described cases in which the affection followed infectious diseases of various kinds and Marie even asserted that infectious disease was the cause of the malady.

Unger, in studying the etiology of multiple sclerosis as seen in childhood, concluded from his observations that preceding diseases, especially those of an infectious nature, were a very important factor in its causation.

Of the seven cases observed by Nolda, in six there was a history of previous infectious disease—diphtheria in three cases, scarlet fever in two cases, and pneumonia in one case—and in five of these cases the symptoms of multiple sclerosis followed immediately upon the infectious disease in question. In the sixth case the symptoms of the nervous affection developed some months after the preceding malady. We must therefore conclude from these observations of Nolda, that multiple sclerosis is to be regarded as a sequela of acute infectious diseases. Adamkiewicz has shown that the lesion in multiple sclerosis consists of a primary affection of the nerves of the central nervous system with secondary change of the neuroglia. Hence, Nolda assumes that the virus of the infectious disease penetrates in some unknown way the medullary sheaths of the central nervous system, which apparently are especially sensitive to it, and thence sets up the whole process.

According to Marie, multiple sclerosis occurs more often in children than has hitherto been accepted and K. Oppenheim asserts that the disease in the adult can not so very rarely be traced back to the earliest childhood. J. W. B.

CLINICAL.

TABES DORSALIS COMBINED WITH MUSCULAR ATROPHY.

Jolly recently showed to the Berlin Society of Psychiatric and Nervous Diseases, a case of combined tabes dorsalis and muscular atrophy with paresis. The "*Centralblatt für Nervenheilkunde und Psychiatrie*," for June, gives some details of the case. The patient was a woman, fifty-one years of age, who, seven years previously had had diplopia and vertigo. For the past four years she has had a furry feeling in the soles of the feet, and of late unpleasant sensations, first in the left hand and then in the right hand also. Syphilis was denied, but the patient had had several miscarriages. She had been often exposed to wet weather and had been obliged to carry very heavy loads.

Status præsens: Ataxia both on standing and on walking, also a paralysis of the left peroneal muscles. The dorsal flexion of the toes of the left foot is affected, while in the right foot the movements are normal. The test for sensibility gives varying results. A light touch is not felt by the great toes of either foot, but sensation to pain is present. The muscular sense of the great toes is also affected.

The upper extremities are wasted, the extensor of the right forefinger and the radial extensor of the wrist, as well as the thumb muscles of the right hand, are all atrophied. There is also atrophy of the left thenar eminence, but here the index finger can be extended, while the other fingers are incapable of extension. Flexion is, however, possible. The electrical reaction is markedly diminished in some muscles. Sensibility is but slightly disturbed. The pupils are unequal, the right larger than the left. They do not react to light. There are no other ocular paralyses.

Jolly concluded, from the results of autopsies in similar cases, that the muscular atrophy in this case was due to a peripheral neuritis. The various features of the case taken together, indicate, in his opinion, that tabes is not a systemic disease, but an affection of the whole nervous system.

J. W. B.

THE VISUAL APPARATUS IN THOMPSEN'S DISEASE.

At a recent meeting of the Hospital Medical Society of Paris, Raymond described ("Union Medicale," June 11th) two cases of Thomsen's disease, in which the ocular muscles were involved in the general process. One of the patients was shown to the society. Raymond claimed to have already proved that the phenomena of Thomsen's disease are due to a parenchymatous myositis with increase of the nuclei of the myolemma.

In the first of the two patients in question the right eye was entirely normal. The left eye showed astigmatism with a certain degree of myopia. The pupillary reaction was normal in both eyes, the visual field was not contracted there was no dyschromatopsia. There was no lesion of the fundus. But when the head and neck were turned suddenly, there was a spasm of the lids which made the eyes prominent, the gaze fixed, and at the same time caused an amblyopia or even a transitory blindness. The internal recti muscles were considerably increased in volume; the hypertrophy was gradually affecting the other ocular muscles also.

In the second patient the spasm was especially marked in the superior recti muscles and was increased by the application of the faradic current. There was no contraction of the muscle of accommodation, nor any asthenopia. The pupils reacted normally, but their reaction to light was of only short duration, as they dilated again almost at once

in spite of the continuance of the stimulus. There was intermittent diplopia. The visual field was normal. There was no dyschromatopsia nor lesion of the fundus. There were, however, amblyopia and transitory amaurosis. These last phenomena were probably dependent on circulatory disturbances, due to compression of the globe of the eye by the contraction of the motor muscles.

This explanation is confirmed by an experiment of Donders, who, after having caused amblyopia in a healthy subject by compression of the eyeball, found, on ophthalmoscopic examination, that the retina was exsanguinated.

That the reaction of accommodation is not disturbed is to be explained by the fact that it is dependent on a smooth muscle—the ciliary muscle—and that the striated muscles only are affected in this disease.

J. W. B.

HYSTERICAL PARAPLEGIA IN A BOY OF THIRTEEN YEARS CURED BY SUGGESTION.

Dr. Eugène Revilliod reports the following interesting case in the "*Journal de Médecine de Paris*," of May 24th. The patient was a boy, thirteen years of age, the son of a workman at Geneva. There was no neuropathic tendency, either hereditary or acquired. In November, 1888, while at his studies, seated before a table, he felt a shock in his legs and found himself suddenly paraplegic, unable to rise from his chair. He was carried to his bed, where he remained six months. After this first attack he gradually recovered and finally was able to walk as well as ever.

In December, 1889, he had another shock while at school. He was taken home and kept his bed for three months. This time the recovery was less complete than before. He walked with difficulty, was easily tired and suffered from pain in the spine and joints.

In November, 1890, there was a third attack, as sudden as the others, during the night. He was not awakened by it, but in the morning discovered that he was unable to get out of bed. As he did not improve, his parents decided to send him to the hospital where he came under Dr. Revilliod's observation. The boy was strongly built, robust, with well-developed muscles and every appearance of health. His face was intelligent and he gave all the details of his case clearly and without hesitation. On examination, the patellar reflex seemed somewhat exaggerated. The patient was then lifted from bed and supported on both sides and encouraged to walk. He moved with the great-

est difficulty, resting all his weight on the persons supporting him; his muscles were spasmodically contracted, the heels elevated and the toes dragged along without leaving the floor. It seemed to all those present that the patient's walk did not correspond to any known type and that it might be a case of hysteria. An attempt was made to hypnotize him and was easily successful. While in the hypnotic sleep he was told to walk and he at once did so without any assistance. The next day he was again hypnotized and informed that he was cured. On being awakened he left his bed and passed the rest of the day walking about the hospital. He had no further trouble except some disagreeable sweating of the hands, of which he asked to be relieved, as it interfered with his work as jeweller's apprentice. Hypnotic suggestion relieved him of this symptom also. Dr. Revilliod heard from the boy's parents some two months later and they said that he was still in perfect health, apparently better than he had ever been in his life.

It should be added that there were three areas of cutaneous anæsthesia on the patient, one on each leg and one behind the left shoulder.

The visual field of the left eye was also much diminished.

J. W. B.

CORTICAL TUMORS.

Dr. Luis C. Maglioni, in a report of cases in Brain Surgery, published in "*Anales del Circulo Medico Argentino*," for March, 1891, comes to the following conclusions regarding cortical tumors:

1st. Tumors of the cerebral cortex are quite frequent.
2d. In the etiology of these tumors, traumatism plays an important rôle.

3d. One may have Jacksonian epilepsy without having a cortical tumor, but it is almost impossible to have a tumor without epilepsy.

W. C. K.

Book Reviews.

BOOKS, PAMPHLETS, ETC., RECEIVED.

IMPROVEMENT IN THE VISION OF MYOPIA BY TREATMENT WITHOUT GLASSES. By W. H. Bates, M.D. (Reprint.)

SOFTENING OF THE BRAIN. By S. V. CLEVINGER, M.D. (Reprint.)

CIRCULAR OF INFORMATION OF THE COLLEGE OF PHYSICIANS AND SURGEONS, 1891-1892.

THE VARYING SIGNIFICANCE OF INTERMITTENT ALBUMINURIA. By John Winters Brannan, M.D. (Reprint.)

NERVOUS FEATURES AND SEQUENCES OF LA GRIPPE. By Archibald Church, M.D.

SIXTEENTH ANNUAL ANNOUNCEMENT AND CATALOGUE OF THE AMERICAN ECLECTIC MEDICAL COLLEGE OF OHIO AT CINCINNATI. Session 1891-92.

ANNUAL ANNOUNCEMENT OF TRINITY MEDICAL COLLEGE OF TORONTO. Session 1891-92.

SULPHURING OR BLEACHING DRIED FRUIT A MISTAKE, IF NOT A CRIME. By Joel W. Smith, M.D.

ANNUAL ANNOUNCEMENT OF THE NEW YORK POLYCLINIC AND HOSPITAL. Session of 1891-92.

ARTIFICIAL MODIFICATIONS OF CLIMATE. By Samuel Wolfe, M.D. (Reprint.)

WITH WHAT SHALL WE VACCINATE? By Samuel Wolfe, M.D. (Reprint.)

LES FONCTIONS DU CERVEAU. Par Jules Soury, Paris.

ŒUVRES COMPLÈTES de J. M. Charcot. Tome ix. Paris, 1890.

SUR UN SYNDROME CARACTERISÉ PAR DE LA TOPOALGIE. By Dr. Paul Blocq. (Reprint.)

THE DIAGNOSIS OF INCIPIENT MELANCHOLIA. By S. Grover Burnett, A.M., M.D. (Reprint.)

BULLETIN OF THE STATE BOARD OF HEALTH OF TENNESSEE, June 20, 1891.

REPORT OF THE SUPERINTENDENT OF THE NEBRASKA INSTITUTION FOR FEEBLE-MINDED.

PRELIMINARY ANNOUNCEMENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, to be held at Kansas City, Mo., October 20, 21, 22, 23, 1891.

CATALOGUE OF THE ALBANY MEDICAL COLLEGE, 60th "Session," 1890-1891.

ANNOUNCEMENT AND CATALOGUE OF THE UNIVERSITY OF THE CITY OF NEW YORK Session 1891-92.

THE INSTITUTION BULLETIN. (Quarterly Announcement of the California Home for the Care and Training of Feeble-Minded Children, June 1st, 1891. Sacramento, Cal.

A VEGETABLE PLATE: also a New Technique in Intestinal Anastomosis. By Robert H. M. Dawbarn, M.D. (Reprint.)

THE SOCIAL AND MEDICAL ASPECTS OF INSANITY. By John Punton, M.D. (Reprint.)

THIRTY-FIRST ANNUAL ANNOUNCEMENT BELLEVUE HOSPITAL MEDICAL COLLEGE, 1891.

FOURTEENTH ANNUAL ANNOUNCEMENT OF THE SEGUIN PHYSIOLOGICAL SCHOOL, 1889.

EXOPHTHALMIC GOITRE WITH MENTAL DISEASE. Report of three Cases with Rare Complications. Charles H. Hay, M.D. (Reprint.)

TREATMENT OF THE OPIUM-NEUROSIS. Stephen Lett, M.D. (Reprint).

THE ANNOUNCEMENT OF THE HOMEWOOD RETREAT. Guelph, Ont. Canada. By Stephen Lett, M.D., Supt.

ANNOUNCEMENT ST. MARY'S MATERNITY, Brooklyn.

CHLORALAMID IN SURGERY. By Emory Lamphear, M.D. (Reprint.)

ANNUAL ANNOUNCEMENT AND CATALOGUE OF THE BALTIMORE MEDICAL COLLEGE, 1891. Baltimore, Md.

VENTILATION AND IMPURE AIR VS. PROPHYLACTIC OR CAUSATIVE OF DISEASE. By P. C. Remondino, M.D. (Reprint.)

BACTERIOLOGY AND PREVENTIVE MEDICINE. Stephen Burt, M.D. (Reprint.)

THE ETHICS OF EXPERIMENTATION UPON LIVING ANIMALS. Stephen Burt, M.D. (Reprint.)

FIRE PROTECTION OF HOSPITALS FOR INSANE. By L. H. Prince, M.D. Chicago, C. H. Blakely & Co.

INTRA-CRANIAL GROWTHS. Fiske Fund Prize Dissertation, No. XLI. Phillip Coombs Knapp, M.D. Boston.

MEDICAL DIRECTORY OF THE CITY OF NEW YORK, 1891. Published under the auspices of the New York Medical Society of the County of New York.

LINEAR CRANIOTOMY (Miscalled Craniectomy) FOR MICROCEPHALUS. M. W. Keen, M.D. (Reprint).

THE INDICATION FOR EARLY LAPAROTOMY IN APPENDICITIS. By W. W. Keen, M.D. (Reprint).

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

ATONIC (RELAXED) PARAPLEGIA CAUSED BY
COMPRESSION OF THE SPINAL CORD.

By J. BABINSKI.

Chet de Clinique, Salpetriere.

Translated by W. J. Herdman, Prof. Dis. Nerv. Sys., University of Michigan

PARAPLEGIAS following a compression of the spinal cord may be divided into two principal groups, according as they are atonic or spastic.

The conditions which determine the flaccidity of paralyzes of the first group are many, which permits the subdivision of atonic paraplegias into several varieties.

Our intention is to study particularly one of these varieties, which until now has been overlooked, or at least the characteristics of which have not been brought out.

It is perhaps superfluous, in order to avoid ambiguity, to give precisely in the beginning the significance of the terms atonic paraplegia and spastic paraplegia.

In their typical forms these two varieties of paralysis are essentially characterized, as we know, the spastic paraplegia by muscular rigidity, contraction of the lower limbs, accompanied by an exaggeration of the tendon reflexes and the ankle clonus, atonic paraplegia, by the laxity of

the muscles, flaccidity of the members, without exaggeration of the tendon reflexes, and most often even with diminution or abolition of these reflexes. Here are the elements for a definition which is not, however, above criticism.

In fact, the contracture and the exaggeration of the tendon reflexes constitute two phenomena, which, although most generally intimately connected, are not indissoluble.

In making this remark I have not in view solely the pseudo-contractures of fibrous origin, or the Parkinsonian muscular rigidity (see Blocq, *Des Contractures*, Thèse de Paris, 1888), or even hysterical contractures, which are all affections in which the tendinous reflexes may be of normal intensity, or even less than normal; the contracture due to an organic affection of the spinal cord, combined with secondary sclerosis of the pyramidal tracts, may itself, as is shown by an observation made by M. Ballet, published by M. Debove (see Debove, *de l'Hémiplégie des Ataxiques*, *Progrès Medical*, 1881, p. 1043), be accompanied at times by a diminution or an abolition of these reflexes. It is, on the other hand, well established that tendon reflexes may, at least after a certain lapse of time, become notably exaggerated in the paralyzed members, endowed with all their suppleness, and safe from contracture. However, there is between these two phenomena a very close relation, and although the term *atonic* should designate, in the literal sense of the word, all paralysis exempt from rigidity, we will apply it only to paraplegias in which the tendon reflexes are abolished, enfeebled, or at the most of an intensity which does not surpass the normal.

As may be seen by what precedes, the state of the tendon reflexes may serve in the generality of cases to distinguish spastic paraplegias from atonic paraplegias and give to each of these groups its characteristic stamp.

It is then essential, before beginning the study which we have proposed, to be sure of the mechanism of the tendon reflexes in the normal condition, and to know the conditions which determine the exaggeration or weakening of these reflexes. I may suppose the works relating to this

subject to be well known and dispense with recalling them here. However, I think it will not be out of place to give a short account of them. It will be easier for me afterward to bring out the novelty of the facts which I publish and to seek an interpretation of them.

A few words, first, concerning the physiology of the tendon reflexes.¹

The expression tendon reflexes, employed to designate the contraction of a muscle, following the percussion of its tendon, prejudices a question which is not yet definitely determined, or at least upon which opinions are still divided. In fact there has been, and is still, much discussion concerning whether this phenomenon, called patellar reflex, because generally the percussion is performed upon the tendon of the quadriceps extensor, is of reflex origin (Erb, Joffroy, Tschiryen, Brissaud, Gowers, Shultze, Furbringer, etc.), or is due to a mechanical excitation of the muscle (Westphal, Eulenburg, Waller, Ziehen, etc.). The difference between these two ways of regarding it, seems at first to have a bearing on the particular subject which occupies our attention. If this phenomenon is due simply to direct irritation of the muscle, it is difficult to conceive the influence which affections of the central nervous system might have upon its production. But the difference is only in appearance, for the partisans of this theory admit with Westphal that the phenomenon cannot be produced unless there exists a certain degree of muscular tone which itself is of a reflex spinal nature. The necessity of a reflex spinal centre, which, as far as it concerns the quadriceps extensor is seated in the lower part of the dorsal and in the upper part of the lumbar spinal cord, is unanimously admitted.

¹ For details consult Brissaud, *De la contracture permanente des hémiplegiques*, Thèse de Paris, 1880; Blocq, *loco citato*; Ziehen, *die diagnostische Bedeutung des Fehlens des Kniephänomens*. *Correspondenz-Blatter des Allgemeinen arzteilen Vereins von Thüringen*, No. 11, p. 466, 1887; Erben, *Neue Beiträge zur Kenntniss der Reflexes*. *Wiener medicin. Wochenschrift*, No. 21 and following, 1890; Sternberg, *Du Reflexes Tendineux*, *Neuvième Congrès de médecine interne à Vienne*, in *Semaine Médicale*, 1890, p. 156.

Most authors place the centre for these reflexes in the multipolar cells of the anterior cornua of the spinal cord. Erben (Nos. 21 and 22, loc. cit.) would locate this centre either in the reticulation of Gerlach or in the bipolar cells of the cervical region of the posterior cornua, or in the fusiform cells of the anterior cornua.

The destruction of this centre or of its reflex arch in any part of its course brings on the disappearance of the phenomenon.

The tendon reflex centres would, to some authors (Setschnov, Levisson, Woraschiloff, Adamkiewicz, etc.,) be in connection with a central inhibitory apparatus, the existence of which is, however, contested by Herzen, Heidenhain, Goltz, Nothnagel, Schwarz, and others.

I recall, also, that according to Gowers (*Neurologisches Centralblatt*, 1890, p. 194) this apparatus would be in its turn subjected to an inhibitory influence which would be exercised by the middle lobe of the cerebellum. This opinion has been combated by Bechterew (*Neurologisches Centralblatt*, 1890, p. 354).

I would add, finally, that according to Charlton Bastian (*Société Médicale et Chirurgicale de Londres, Séance du 25 Février, 1890, in Mercredi Médical, 1890, p. 107*) the brain and the cerebellum produce upon the reflex centres a dynamogenic action, the suppression of which, as we shall see hereafter, would lead to the abolition of the tendon reflexes.

Let us see now under what conditions the tendon reflexes can be exaggerated. (Consult Ziehen, *Die diagnostische Bedeutung der Steigerung des Kniephänomens und des Fussklonus. Correspondenz-Blätter des Allgemeinen ärztlichen Vereins von Thüringen, 1889, No. 1, p. 61.*)

We have associated together above the exaggeration of the tendon reflexes and the ankle clonus.² We must not forget at the same time that if these two phenomena are connected they are not bound one to the other. The reflex

² We recall that the first researches upon the Rotulien reflexes date back to 1875, and are due to Westphal, and that the first description of the foot clonus was given in 1862 by M. Charcot and Vulpian.

of the knee may be present in normal subjects and in great intensity, while the ankle clonus, at least with adults, is in a great majority of cases, if not always, the expression of a pathological state.

Rotulien reflexes may be notably exaggerated at the same time that the other phenomenon is completely absent, while the inverse condition is quite exceptional. Several instances might be cited where the foot clonus coincides with the abolition or the diminution of the reflex of the knee. (Mendel's Observations, *Arch. of Psych.*, xix., S. 524; De Golfam, *Neurol. Centralblatt*, vii., 11 Fall 11; d'Oppenheim, *Arch. f. Psych.*, xix., S. 525, cited by Zeihen.)

With these reservations we should recognize that a close relation exists between the exaggeration of the Rotulien reflexes and the foot clonus; that all causes liable to produce the foot clonus are also capable of increasing the intensity of the patellar reflexes.

What, then, are these causes? I shall be brief in what concerns the organic affections of the encephalon. I shall content myself by recalling that during apoplectic attacks, or immediately after the attack, the tendon reflexes may be exaggerated on one or both sides, and most often there is at the same time convulsions and contractures. This happens in extreme cases of hemorrhage, or of hemorrhage invading the lateral ventricles, the fourth ventricles, the pons or the medulla.

From the second to the fourth day after an apoplectic attack, convulsions and contractures sometimes develop, accompanied by exaggeration of the tendinous reflexes. These phenomena disappear in a few days, and are due to the inflammatory reaction of the cerebral centres.³

Authors who admit the existence of the encephalic centre of inhibition, which we have mentioned above, attribute the exaggeration of the reflexes, in the circum-

³ See Erben (*loc. cit.*, p. 1917). According to Sternberg (*Überschuen-reflexe*, Beilage zum *Centralblatt f. klin. Medicin*, 1870, No. 27, p. 80). Contrary to the opinion commonly admitted, the contractures which supervene in cases of severe cerebral hemorrhages, of cerebral abscesses or tumors, of meningitis, coincident with a weakening of the tendon reflexes,

stances which we have mentioned, to the paralysis of that apparatus.

I now come to the organic affections of the spinal cord. We know that there exists between descending sclerosis of the pyramidal tracts and the exaggeration of the tendon reflexes, as well as the contracture, an intimate relation, which has been shown, especially by the investigations of MM. Charcot and Bronchard. These authors admit that this sclerosis provokes the appearance of spasmodic phenomena by the excitation which it exercises upon the motor cells of the anterior cornua of the spinal cord. In the opinion of some pathologists (Westphal, Strümpell, among others), the exaggeration of the tendon reflexes would be independent of the secondary degeneration. This would be only a coincidence resulting from the fact that in cases of this order, the inhibitory centre of the encephalon has ceased to exercise its action, as a result of the destruction of the nervous fibres which unite it to the medullary centre of the tendon reflexes. To support this opinion they cite the cases of cerebral affections which we have called attention to above, in which the tendon reflexes are exaggerated from the beginning, before the appearance of the descending sclerosis.

This argument seems to us to have little weight in favor of this point. It simply demonstrates what no one contests, that secondary sclerosis is not the condition *sine qua non* of the exaltation of reflexes. If it is admitted that this sclerosis exercises no influence upon the tendinous phenomena, how can we understand that most frequently these phenomena become exaggerated only after several weeks from the beginning of the cerebral lesion, and then only does the sclerosis begin to develop? Besides the interpretation of the facts is of but secondary importance. However this may be, the relation between descending sclerosis and the exaggeration of the tendon reflexes is one of the data which seems best established.

In lateral amyotrophic sclerosis the exaggeration of the tendon reflexes is also the rule until the moment when amyotrophy predominates.

In multiple sclerosis, where several patches occupy the lateral tracts, the reflexes are frequently of great intensity; at the same time the change of the pyramidal fasciculi in this affection is not connected or as intimately as the secondary sclerosis with the exaggeration of the tendon reflexes. This may even in such cases be entirely lacking.⁴

This difference arises doubtless from the fact that in descending sclerosis the nervous fibres affected are completely destroyed, while in multiple sclerosis there is generally a persistence of the axis-cylinder. (Charcot, Vulpian, Babinski.)

Finally, a compression of the spinal cord, without secondary degeneration, may provoke the excitement of the patellar reflex and the appearance of the ankle clonus, as is demonstrated by an observation by Colman (the *Lancet*, 1890, p. 402).

After having passed rapidly in review the causes of increase of the tendon reflexes, we will examine the causes of their weakening or abolition.

This modification in the condition of the reflexes may arise exclusively from senility; it may be observed in general maladies, cachexies, diabetes (Blanchard), and in certain neuroses, especially in neurasthenia.

In cases of intense cerebral apoplexy, the tendon reflexes may be weak from the beginning, or even abolished. What causes this? The excitation of the inhibitory cerebral apparatus, according to some authors. Erben combats this hypothesis; he calls attention, with justice, to the fact that it is difficult to conceive how the inhibitory centres could be super-excited when all the other encephalic centres are depressed, and he laughs at the theory advocated by Trousseau, Jackson and Jaccoud. These authors hold that a strong cerebral hemorrhage may produce a shock, an unexcitability of the whole nervous system.

In acute transverse myelitis, in hemorrhages, in traumatism of the spinal cord, an abolition of the tendon reflexes

⁴ Observation 11 of my thesis (*Etude anatomique et clinique de la sclérosis en plaques*: Thèse de Paris. 1885. p. 68).

may be observed at the beginning. According to our master, M. Charcot (oral communication), this is a bad augury. As in case of cerebral hemorrhage, the hypothesis of the nervous shock may be used to explain these facts.

The alteration of the spinal centres of the tendon reflexes has for a natural consequence the weakening or abolition of these reflexes; so the compression of the spinal cord. In the regions where these centres are located, and *à fortiori* its destruction lead to this result.⁵ The same phenomenon may be observed when a lesion occupies any part of the reflex arch. It is the same when the centripetal nervous filaments are affected in their intra-spinal path, in that part of the spinal cord known by the name of column of Burdach or the external radicular zone [Westphal]; the rotular reflex, in particular, disappears when the sclerosis of the radicular zone is located in the upper part of the lumbar region and in the lower part of the dorsal region. If there are exceptions to this rule, it arises, without doubt, from the fact that in certain cases of sclerosis the axis-cylinders may preserve, in a more or less complete way, their anatomical and physiological integrity.

These ideas, relative to the abolition of the tendon reflexes, were established long ago and have become classic. The same is not true of the facts which we are now going to examine. It is generally admitted, as we know, that in lesions which occupy the whole diameter of the lower cervical or dorsal spinal cord the tendon reflexes are not long in becoming exaggerated and in developing contracture of the lower extremities. Now Charlton Bastian, Bowlby and Tooth have brought in observations which have contradicted this opinion.⁶ This pertains to cases in which, following a fracture of the spine, a lesion existed occupying the whole of the spinal cord in the regions above indicated; these

⁵ Erb (Handbuch der Krankheiten des Nervensystems, Elfter Band, Zweite Hälfte, 1878, 355) reports a fine observation of this nature.

⁶ Medical and Surgical Society of London (meetings of Feb. 25, April 13, May 13, 1890). See the Lancet, Nos. ix, xv, xx, of Vol. 1, 1890; or Mercredi médical, Nos. 9, 20, 1890.

anatomical disorders were manifested clinically by an absolute sensito-motor paraplegia accompanied by rectovesical troubles and by a complete abolition of the tendon reflexes. The autopsy, which it has been possible to make in several of these cases, has established that the spinal cord was completely destroyed at the level of the compressed region, and that there existed below this centre a descending degeneration of the pyramidal fibres; it has also shown that the anterior cornua was not altered, which proves that the abolition of the reflexes cannot be attributed to a concomitant lesion of this part of the spinal cord, as one would be tempted to suppose at first sight. And if it be considered that some of these patients were attended during several weeks, neither can the phenomenon be attributed to the shock. Bastian and Bowlby conclude from these facts that when one portion of the dorsal or cervical spinal cord is destroyed throughout its extent, the tendon reflexes of the lower extremities disappear, and that because the cerebrum and cerebellum cease to exercise their dynamic influence upon the lumbar spinal cord. In the minds of these authors, when the crushing of the spinal cord is incomplete, the tendon reflexes become exaggerated inversely. The abolition of tendinous reflexes would indicate, then, a deep-seated disorganization of the spinal cord and would be an argument against intervention.

We have just shown in what circumstances the tendon reflexes may become exaggerated or weakened. It remains for us to indicate how these reflexes comport themselves when two causes—one in the direction of exaggeration, the other in the direction of weakening—find themselves united in the same patient. These are our ideas upon the subject: When sclerosis of the pyramidal tracts is combined with a sclerosis of the root zones in the region, whose limits were fixed by Westphal, the rotulien tendon reflexes are abolished. There is also an abolition of these reflexes when the pyramidal sclerosis is joined to an alteration of the anterior cornuæ in the lumbar region. We have seen that, according to Bastian and Bowlby, the same phenomenon is observed in spite of the development of the descend-

ing sclerosis, when a portion of the spinal cord is destroyed in all its diameter. Finally, theoretically, different combinations might be conceived (association of descending sclerosis and of diabetes, for example) which would, perhaps, terminate also in the abolition of the tendon reflexes. The preceding explanation shows the conditions required in order that paraplegia, caused by compression of the spinal cord, may remain relaxed. We will recall them briefly.

Relaxation or atony is observed in paraplegias which are due to a compression located in the lumbar-dorsal region at the level of the centres for the tendon reflexes. If the lesion occupies the dorsal or cervical region, the paralysis may still be relaxed at its beginning; or, when the arc of the tendon reflexes is altered by one of the parts constituting it; or, admitting the opinion of Bastian and Bowlby, when the spinal cord is destroyed throughout its diameter. But if none of these conditions are realized, the tendon reflexes become exaggerated a few weeks after the beginning of the paralysis, the foot clonus makes its appearance and immediately the contracture becomes established. The development of the spasmodic phenomena of descending sclerosis of the pyramidal tract, which is itself consecutive, is generally attributed to the alterations which the agent of compression produces in the spinal cord.⁷

These conclusions, however, should not be considered as positive. We have seen the uncertainty which still reigns over the subject of the physiology of the tendon reflexes, and it is difficult, whatever the theory that one may choose, to adapt it to all the pathological facts. Science is not yet positively fixed in this regard. But before seeking to give the exact interpretation of these facts, we must determine their conditions with increasing precision.

⁷ In what concerns the anatomical study of lesions, consult: Michaud, *Sur la méningite et le myélite dans le mal vertébral*. Thèse de Paris, 1871. Strümpell, *Lehrbuch der sp. Path. u. Ther.* Kahlen, *Prag. med. Woch.*, 1883, Nos. 47 and 52. Pink, *Real, Encyclopedea, Art. Rückenmark*. Roseobach u. Schtscherbach, *Ueber die Gewebsveränderung des Rückenmarks in Folge von compression* *Arch. von Virchow*, 1890, *Bam.* 122, Heft 1. Schmans, *Beiträge zur pathologischen Anatomie der Rückenmarkerschütterung*, *Archiv. von Virchow*, 1890, *Bam.* 122, Heft 2 u. 3.

The anatomo-clinical observations which I present in this work seem to me of a nature to modify in part the data generally admitted, in showing that paraplegia may owe its flaccidity to circumstances which have not been anticipated up to the present, or, at least, to which attention has not been sufficiently directed.

These observations are upon two patients whom I examined and attended until their death in the *Hôpital de la Pitié*, in the service which I then had under my direction. They were recorded by my friend, M. Berge, *interne* of the hospitals, whom I thank heartily for his intelligent assistance.

OBSERVATION 1.—Affre Jacque, age 64 years, leather dresser, admitted June 15, 1890, to the hospital of La Pitié, in the ward Ryer.

As to his hereditary antecedents and his pathological past history, there is nothing worthy of mention.

The affection for which he entered the hospital manifested itself for the first time about the middle of January of the current year (1890). At this time he began to experience pain in the lumbar region and in the abdomen, and he felt at this level a sensation of constriction; but there was no trouble in walking. During more than three months his condition remained nearly stationary. Then the patient observed a difficulty, which increased rapidly, in the movements of flexion and extension of the vertebral column; at the same time walking became difficult.

These different symptoms continued increasing and about May 20th were so severe that the patient could no longer keep up and was obliged to take to his bed. Ten days later, to these troubles was added an incontinence of urine.

This is the report made upon his condition when admitted to the hospital: The motor paralysis of the lower limbs, in their different segments (thighs, legs, feet and toes), is complete; no spontaneous movement can be elicited. These members are completely relaxed; their muscles are apparently not atrophied and contract normally under the action of induced currents. The tendon reflexes are

entirely abolished and no reflex tremors of the feet exist. The patient experiences tingling in the legs. Sensibility in its various forms, remains; it is only a little dulled in the lower part of the legs and in the feet.

Nothing abnormal in the upper extremities, nor in face.

At the level of the fourth dorsal vertebra a projection was discovered—a swelling, painful to the touch.

The lumbar and abdominal pains observed from the beginning, continue.

There is a distention of the bladder and incontinence from overfulness; there is also incontinence of fecal matter and profuse diarrhœa.

In the sacral region there is an eschar of some extent.

The urine contains pus and albumen.

The heart is normal; nothing appreciable is wrong with the lungs.

Slight fever.

The patient remains in the same condition as when admitted [June 15], until the end of the month. The paraplegia, in particular, remains atonic, and the tendon reflexes are lacking.

June 30, a painful œdema of the left lower limb was discovered.

This œdema became more marked the following days. The superficial veins are distended. A hard cord can be felt in the upper part of the thigh, which corresponds to the path of the femoral vein. The fever became higher (30–31.5 C.).

The mind, until then unaffected, became clouded July 6th; the patient seemed not to understand what was said around him until July 7th, when the depression was still more marked.

July 8th the patient died.

(To be continued.)

A CASE OF LATERAL HOMONYMOUS HEMI-AN-OPSIA.

By THEODORE DILLER, M.D.,

Fellow of the Pittsburgh Academy of Medicine

CLINICAL SUMMARY: *Blindness of left lateral half of both retinae coming on suddenly during great mental excitement in a woman aged 53, who has had three cerebral hemorrhages; persistence of the condition since January, 1890.*

MRS. S., an exceedingly stout and plethoric woman aged 53, suffered from an attack of monoplegia involving the left arm fourteen years ago. The condition gradually passed away so that at the end of a few months she was in her usual good health. After recovering the use of her arm, she considered herself well until January, 1890, when her eye-trouble became manifest. About this time she was in great trouble about some domestic matters, and, at times, took part in exciting discussions. One day, after being engaged in a spirited debate, while in a highly emotional state, she noticed, for the first time, that she could not see persons to her right unless she turned her head in that direction much further than usual. This symptom has persisted, without variation, up to the present time. (Aug. 15, 1891).

February 9, 1890, she became paralyzed in the right arm and, at the same time, suffered from a considerable degree of aphasia. These symptoms disappeared in the course of a few weeks. She then considered herself again well, but for the visual defect to which she had become accustomed and which caused her but little trouble.

In October, 1890, she was seized with an attack of unconsciousness lasting about an hour. Upon return of consciousness she found that she was unable to move her left arm or leg. She was hemiplegic. By January, 1891, at which time I was called in consultation with Dr. Sowash to see her, a certain amount of motion had returned in the leg, but not enough to enable her to walk. The paralysis

in the arm was still almost complete. Since January electricity has been applied to the paralyzed parts, while strychnia and the iodide of potassium have been given by the mouth. This treatment has been followed by a considerable increase of power in the leg and by a slight increase in the arm. I fear, however, the arm will not regain much more strength as a certain degree of atrophy of the muscles is now apparent.

On my first visit I carefully examined her eyes and found the following conditions present: Pupils equal in size, normal in contour; equally responsive to light, reflex and accommodation; no retinal changes. Patient reads newspaper held at the ordinary distance with ease. Field of vision apparently about the same for each eye; able to see objects only when they are placed somewhere within the left lateral halves of the fields of normal vision. She can see nothing placed within the normal field of vision for the left lateral halves of the retinae. The case is therefore one of right homonymous hemianopsia.

In the latter part of June, Dr. W. F. Robeson examined the patient's eyes and made the following report as to their condition:

I submit the following report on Mrs. S——'s case:

Externally there is nothing odd or peculiar about either eye to attract attention.

Conjunctiva, normal.

Pupillary distance, 61 mm.

Irides: Both irides respond quickly to light and about equal in color.

Pupils: Equal in size; fail to respond to Wernicke's inactive test. $+1.00$ D.

Field of Vision: Shown in accompanying diagrams.

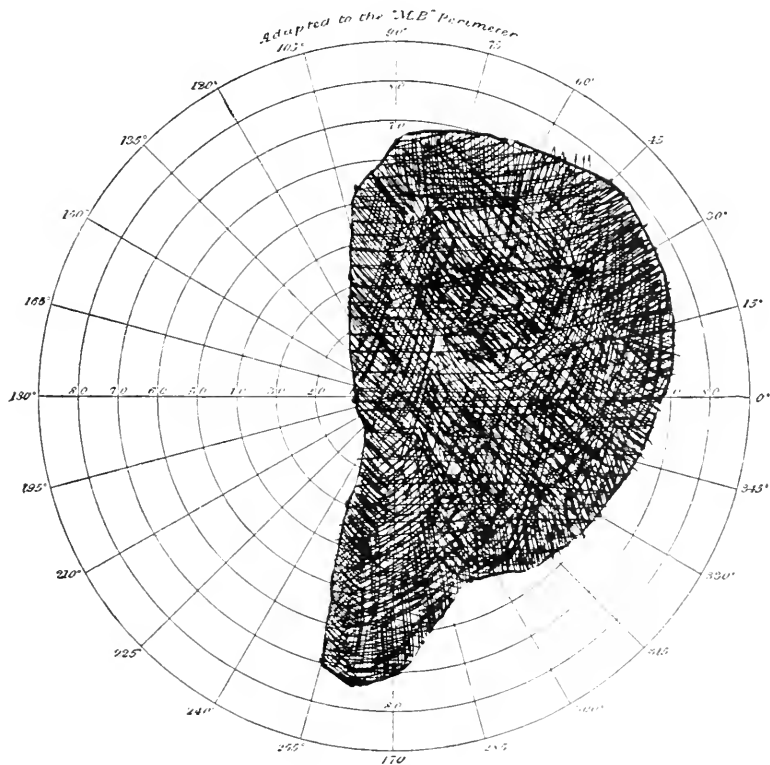
Ophthalmoscopic examination:

O. D. Media clear. Nerve oval; axis, 90° ; normal in size; color is pale, but no evidence of atrophy. Vessels small, as a rule. Scleral ring all around nerve. No choroidal crescent. Retina and choroid, to all appearances, normal.

O. S. Media clear. Nerve round and paler in color, but no atrophic changes. Vessels small in diameter. Scleral ring all around, but no choroidal crescent. Retina and choroid, to all appearances, normal. $+1.00$ D.

REMARKS.

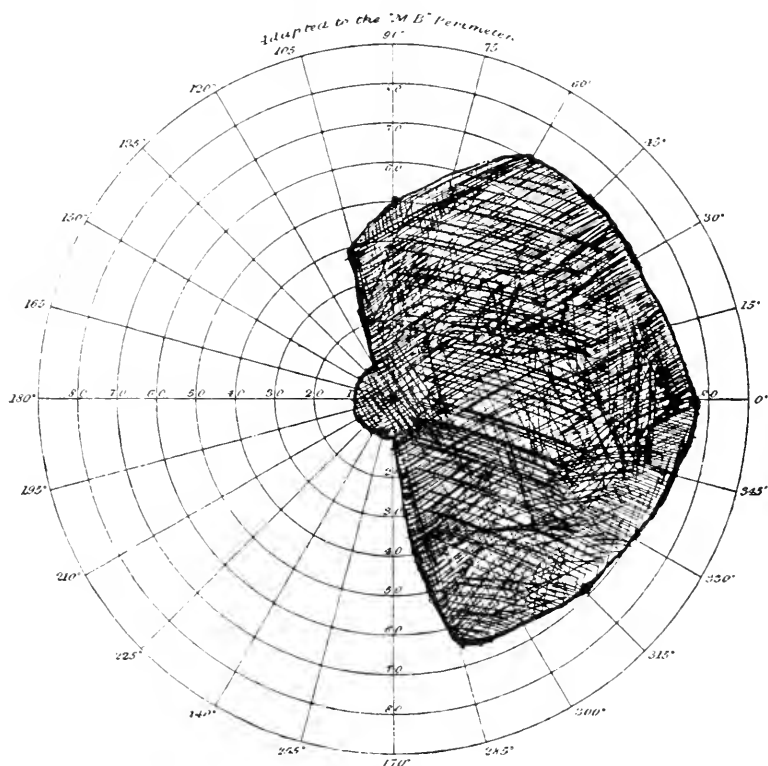
The two attacks of monoplegia and one of hemiplegia must have been caused by cerebral hæmorrhages. Therefore it seems to me the conclusion is most plausible that the sudden partial loss of vision was due to the same cause. The seat of the lesion must be in the occipito-angular region of the cerebrum or else at some point in the tract which connects the visual center with the eye-ball.



Field of Vision—Right Eye.

Let us briefly consider, in the light of physiological knowledge and clinical experience, the symptoms which would be expected to result from lesion of the visual centre, the fibres connecting it with the retina and the intermediate ganglia concerned in vision.

A lesion confined to the angular gyrus will, according to Ferrier,¹ produce temporary amblyopia of the opposite eye. The destruction of the optic lobes alone by this experimenter produced negative effects upon vision. But the entire destruction of the occipito-angular region, according to the same author,² will produce permanent lateral hemi-



Field of Vision—Left Eye.

opia to the opposite side. Schäfer and Horsley,³ in their experiments, found that this hemiopia was nearly always temporary. Mills⁴ believes that clinical and pathological

¹ Functions of the Brain. Second edition, p. 287.

² *Op. cit.*

³ Brain, Jan., 1888.

⁴ Cerebral Localization, p. 250.

records have established the fact that "in the cuneus and its immediate neighborhood the visual half-centre for retinal sensations is located." He cites, in support of this proposition, cases reported by Jastrowitz,⁵ Habb,⁶ Huguenin,⁷ Monakow,⁸ Seguin⁹ and Hun.¹⁰ Mills' view has also in its support, the older observations of Charcot.¹¹ Hun, Noyes,¹² and Mills are further in accord in believing that definite parts of the occipito-angular region are in relation with corresponding quadrants of both the retinae. It may be found subsequently that they are in relation with even smaller sections of the retinae (eighths). Hun reports a very clear case in support of this theory. None of these experimenters or observers records an instance of hemiopia of *one eye alone* as the result of destruction, removal or disease of the whole or part of the cortical visual centre.

The greater part of each optic nerve decussates to the opposite chiasma. A smaller number of fibres do not decussate. "Secondary atrophy of the optic tracts which ensues on the enucleation of the eye-ball involves the corpus geniculatum externum, the pulvinar of the optic thalamus and the superficial gray layer and the superficial medullary fibres of the anterior tubercles of the corpora quadrigemina."¹³

The annexed figure will serve to represent diagrammatically these various centres and their anatomical connections, together with the decussation in the chiasma. Although it is still doubted by a few that the optic nerves decussate as represented in the diagram, the preponderance of evidence is now so overwhelmingly in favor of such a decussation that this must be considered as proven to be the arrangement of fibres in the chiasma. The experiments of Gud-

⁵ Centralb. für prakt. Augenheilk., Dec. 1879.

⁶ Klinische Monatsblätter f. Augenheilk., xx., 141, 1882.

⁷ Archiv. f. Psychiat. u. Nervenkrankheiten, Bd. 16. s. 166.

⁸ Jr. Nerv. and Ment. Dis., Jan., 1886, 1-38.

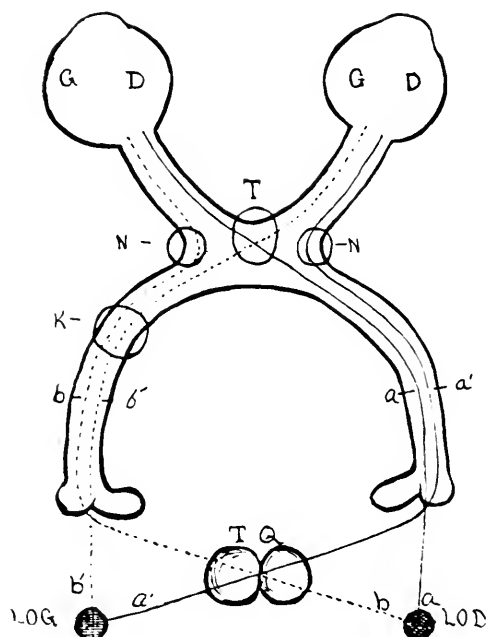
⁹ Am. Jr. Med. Sc., Jan., 1887, 140-168.

¹⁰ Ibid.

¹¹ Leçons sur les Localisations dans les Invalides du Cerveau, pp. 124-5-6.

¹² New York Med. Rec., May, 1890.

¹³ Ferrier, Functions of the Brain, second edition, p. 155.

SCHEME OF DECUSSATION OF THE OPTIC TRACTS (AFTER CHARCOT).¹⁴

T, semi-decussation in the optic chiasm. T Q, decussation posterior to the corpora geniculata. a'b, fibres which do not decussate in the chiasm. b'a, fibres which undergo decussation in the chiasm. b'a', fibres coming from the right eye which meet in the left hemisphere. LOD, right hemisphäre. K, lesion of the optic tract, producing right lateral hemiopia. LOG, a lesion at this point producing right amblyopia. T, lesion producing temporal hemiopia. NN, lesion producing nasal hemiopia.

den,¹⁵ Gauser¹⁶ and Monakow¹⁷ are in accord in demonstrating that the enucleation of one eye is followed by partial atrophy in both optic tracts. Moreover, Ferrier¹⁸ supports the view of Hannover that the direct fibres lie on the corresponding side (fasciculus lateralis) of the chiasma and

¹⁴ Drawn by Wm. E. Henderson, M.D., Pittsburgh.

¹⁵ Archiv. f. Psychiatrie, 1870.

¹⁶ Ibid, 1882.

¹⁷ Ibid, 1883.

¹⁸ Functions of the Brain, second edition, p. 155.

optic nerve. Delbrück¹⁹ recently reported a case of great interest in this connection which materially strengthens this view of the anatomical relations. In an insane man, aged 70, the left optic nerve was completely degenerated, while upon the right side only *one-half the nerve was similarly affected*; only the right non-decussating bundle was found normal. This writer, in common with many other authorities, holds that the decussating fibres occupy the free border of the tract and the non-decussating fibres the interior.

It may now be considered as pretty well proven that in the optic nerve the decussating and non-decussating fibres occupy the inner and outer sides of the nerve respectively.

In view of the above considerations it seems certain that the lesion in the case under consideration must be in the left optic tract or in the continuation of fibres up to the occipito-angular region. The failure to elicit Wernicke's hemiopic pupillary inaction symptom would indicate that the tract is in normal condition. The lesion must therefore be either in the corpus geniculatum, the pulvinar, the corpora quadrigemina or the occipito-angular convolutions. From the clinical fact that the last named region is the most frequent seat of hæmorrhage of all those mentioned, the probabilities would indicate that the lesion is there situated. Moreover, it is doubtful whether a lesion in any one of the intermediate ganglia would have produced such complete hemiopia.²⁰

¹⁹ Archiv f. Psychiatrie, Bd. xxi., Hft. 3.

²⁰ Dr. Samuel Ayers, who saw the case since the above was written, concurs in diagnosis.

CEREBRO-SPINAL MENINGITIS.*

By J. S. NOWLIN, M.D.,

Shelbyville, Tenn.

CEREBRO-Spinal Meningitis—the first thought I offer is that our nomenclature in this as in many other diseases leads to an erroneous view of the pathology and treatment. Our authors have almost universally written as though the inflammatory action found in the coverings of the brain and spinal column was the original lesion to be combated. It will not be necessary for the purposes designed in this paper to deny the fact that an inflammatory action may be found in many cases. The error as I conceive it to be and to which I would direct attention is that the inflammation, if it does exist in a given case, is not the disease to be treated, but a sequence. It is only necessary to call attention to the great number of deaths occurring within five days with no exudation in these tissues evincing inflammation. It is a self-evident proposition that the cause of death is not inflammation. Realizing the thorough knowledge of the members of this association with the literature of this subject I shall not burden you with quotations to prove this and other facts which I shall present. I mention, however, that Dr. Alfred Stillé, alluding to this question says, “There ought to be no doubt, whether epidemic cerebro-spinal meningitis should be classed with general diseases or with inflammation. It is excluded from the latter class by the total absence of any tangible external cause, as well as by its frequent fatal termination before the characteristic signs of inflammation have had time to form, or because the peculiar type of the disease prevents their development.” It is clear to every mind that it is non-inflammatory trouble and that the inflammation is only concomitant. I remark further that the impress of the cause, whatever it may be, is made upon the nerve centres, but before noticing directly the etiology, I submit the history of five cases which I saw in 1888.

* Read before the Am. Med. Assn., at Washington, May 5-8, 1891.

In December, Mr. H., aged 44, was attacked. He had not been well for two or three weeks, suffering each day with pain in shoulders and neck and in arms and back. He kept up work on his farm, and attributed his pain to rheumatism. On Saturday he came to Shelbyville and returned home, a distance of four miles. During the day his nose bled freely. This had occurred at different times previously. He complained somewhat the same way on Sunday, and at 8 P.M. had a chill. Headache and eyes pained intensely, and he suffered excessive pain in his knee joints. His throat was sore, and in less than an hour he was delirious and almost entirely deaf. Dr. A. P. Ryan was called to see him and found a bounding pulse, temperature 100° , and he could be kept in bed only by the greatest effort of three strong men. He gave him bromide with heavy mercurial purgatives, and large doses of morphine. He cupped him and poured large quantities of well-water on his head. I saw him at eleven o'clock Monday night, after he had been sick twenty-four hours. He was hardly conscious of his surroundings, his mind was entirely obscured, and he was deaf. He could see with difficulty and there was ptosis of the lid of left eye. One pupil was much more dilated than the other and both responded to light slowly. He was continually tossing and when still for a moment, was on his side and never on his back. There was constant desire to micturate, but the urine was voided with great difficulty. Red spots appeared on his face, body and arms, from the size of a pin's head to that of a five cent piece. His knuckles and wrist were especially red, and the skin in the highest state of hyperæsthesia, pressure upon the hand producing contraction of the muscles of the face. There was an herpetic eruption on the lips; the head was slightly drawn backward; he had distressing nausea and vomiting from the beginning. We gave him six drops of *veratrum viride* every three hours, and ten grains of quinine every hour until six in the morning. Although he vomited frequently, we thought he had retained most of it. At that hour his symptoms were greatly improved. He was rational and could see fairly well, though one eye squinted. His stomach was quiet and he had slept some. He drank some milk and had a free and copious action from the bowels. The quinine was suspended until evening, the *veratrum* was not given after four in the morning. *Morphia*, potassium and bromide and tinct. of *gelsemium* were given through the day. He passed through the day (Tuesday) much better than Monday, but as night approached his ugly symptoms returned, and notwithstanding the quinine and all

other available means were pressed through the night, it was quite evident on Wednesday morning he must die, which he did that night at nine o'clock.

On the following Friday afternoon the little daughter of Mr. H., aged five years, apparently in good health, and out at play, came hurriedly in to her mother complaining of pain in the region of the umbilicus. She soon had shivering followed by pain in the head and neck, pulse 140, breathing rapid, with an occasional sigh; temperature 103° , delirium and sick stomach; opisthotonos marked; skin hyperæsthetic; blind in one eye from infiltration of the cornea, which was perfectly white. She had a red eruption. She was bathed in warm water, given gelsemium, quinine in large doses, and nothing left undone that promised relief. She died on the following Monday night.

On Tuesday, her brother, thirteen years old, had a chill followed by pain in nape of neck, sick stomach, headache, sore throat, pain in back and a peculiar pain about the joints of the lower limbs. He was given quinine and calomel, and recovered in a few days with but little trouble. He had a similar epistaxis to that of his father, but there was no eruption. This family lives on the side of a considerable hill. The front of the house is three or four feet above the surface while the rear rests flat on the ground. The soil on the south side and rear of the house, was at that time continually damp. The drinking water was for the most part, from a spring which had been dry during the summer months. Long preceding this, it had been walled with wood, which at this time was in a state of decay. The washings of soil, leaves and grass and every conceivable thing had lodged for years within this enclosure. When the stream began to run in the autumn it was sluggish. Here in my opinion is the source of the sickness in this family.

On March 6, 1889, Wm. G., aged 21, was attacked with shivering followed by intense pain in the head, neck, back and nape of neck, and especially the bowels. His knee joints were painful and he had sore throat. He had been quite unwell for several days preceding this, and his nose had bled several times.

The cold stage was followed by contraction of the muscles of the hands and arms, spells difficult and panting breathing were frequent, his pulse and temperature were normal. He was boisterously delirious, had sick headache, spots on the face, and herpes labialis. He was given anodynes, bromides and calomel. He also had large doses of quinine and morphia. The morphia did not affect him—

pleasantly; in eight hours he was given eighty (80) grains of quinine. He also had every four hours, one drop of carbolic acid and three of tinc. of iodine in water. He had large quantities of cold water poured on his head at first, but it seemed that hot water had the most desirable effect, as it quieted him for the time being. He recovered in twelve days. I may mention that after being up a few days and walking a quarter of a mile, he had a relapse in which many of the first symptoms recurred. His sister had the same symptoms, but not so severe and she also recovered.

On March 24, 1889, G. C., aged 21, living in Shelbyville, had a chill followed by a fever, pain in head, neck, back and limbs, especially in calves of legs and knee joints, hyperæsthesia of skin, sick stomach; temperature 103° , pulse 100. Tongue broad and coated. He had red spots on hands, particularly the knuckles, and on the wrist and body. I saw him at 10 P.M. of the 24th, at that time he was only partially delirious. He had ten grains of calomel and thirty grains of quinine through the night, with sufficient morphia to keep him quiet. On the 25th his temperature was lower, and his pulse 90, pain in head more intense, patient somewhat stupid, considerable deafness and muttering delirium.

He was given bromides, gelsemium, ergot and calomel. The tinc. of iodine and carbolic acid mixture was also given. Quinine was pressed as rapidly as possible.

On the afternoon of the 26th he had a convulsion, and during the night the convulsions recurred several times. His right side was paralyzed. He died on the afternoon of the 29th, having been sick five days.

These cases were of the most malignant type. Quite a number of cases more mild were treated during the months of January, February and March. They had the erratic pains which were felt in different parts of the body, headache and pain in nape of neck, and lower limbs. Many cases had redness of skin on hands and wrist; some had fever three or four days, others much shorter time. I could if necessary give their history in detail. There can be no doubt that the original lesion of this trouble, is to be found in the nerve-centres. The rational signs point unmistakably in that direction, and the physical symptoms lead the same way. The impress of the poison, whatever it may be, is made originally on the nervous system. I

conclude from observations made not only in the year 1888-89, but from the cases that I treated in the years of 1860 to 1863, that the real cause of this disease is malaria.

The symptoms of malarial blood poison are as protean in their manifestations as the shades of the chameleon. The three cases in the family of Mr. H covered the extremes of these manifestations. The prodromata in the father's case were clearly indicative of nerve lesion. The same as usually produced by malaria.

The shifting and shooting pains in the body, the headache, pain in back and limbs, all point in that direction. The epistaxis was evidently dependent on malarial trauma. A bleeding nose in the early history of a fever is a strong evidence of malarial origin. Herpes labialis is also often obscured in the milder types of malarial trouble. If we take the three common types of malarial fever, intermittent, remittent and pernicious, we have extremes enough to cover all the phenomena and peculiarities of the so-called cerebro-spinal meningitis. The young man, Mr. C., had just one week previous to his fatal attack, the most intense pain in his legs and knee joints. The red eruptions on the knuckles of his hands. This all subsided within twenty-four hours and he was at his usual occupation for the succeeding week. I observed this periodic return of the symptoms in several cases.

While the ordinary types of malaria are developed in the autumn and spring, and seldom in the winter, it is true that the pernicious cases are as apt to be developed in February and March, as at any other season. I do not think the fact that cerebro-spinal meningitis has been observed in mid-winter, is sufficient argument against the malarial origin. If I have succeeded in showing some facts, proving that inflammation is not, and should not be the overshadowing symptom, and that it must not control the treatment, and further, if the cause is found in malaria, then the line of treatment is plain.

The practitioner who has confronted this dreaded disease and who has looked through the pages of the best authorities, must feel that he goes into the battle with an uncertain guide and a trembling hand.

Uncertainty as to cause, and an evident want of confidence in the remedies recommended, mark the written history of cerebro-spinal meningitis. A disease so bold and rapid and fatal in its results, must be met by no faltering hand. It is no new thought that malaria is the cause, but I insist that the fact has not been fully recognized and that the treatment, both prophylactic and curative, has not been thoroughly tested—because of this want of recognition. No disease of malarial origin can be satisfactorily treated upon general principles. It is a specific disease and requires specific treatment.

Quinine is the antidote and without it no success can be expected. There are many adjuvants which must be used: Calomel in large doses and often repeated, venesection and veratrum are among the best arterial and nerve sedatives, and at the same time they favor the absorption of other medicines, and the elimination of blood-poison. The bromides, chloral and morphia, are to be used freely. The quinine should be used hypodermically in not less than five grain doses, and at not longer intervals than one hour; the bisulphate is the best for this purpose and can readily be dissolved in warm water.

There are a few cases which cannot be controlled in every epidemic of any disease, but they all have their prodroma and if the medicines are given in time many cases can be prevented from reaching the grave type.

This is eminently true of cerebro-spinal meningitis. It is as a prophylactic that quinine is to be the greatest boon. When it is threatening to be epidemic the physician should warn his patient that the first shooting pain and the earliest uneasy aching, the slightest headache or arthralgia, must be met with quinine.

It is here that the inflammatory theory has done its greatest harm by withholding the hand in fear of exciting it.

Let it be remembered that malaria is killing the patient and not inflammation, which is one of the sequelæ of the perverted blood-vessels caused by an influence exerted through the nervous system.

AN INTERESTING AND INSTRUCTIVE CASE OF
URÆMIA, COMBINING COMA AND MANIA,
WITH MARKED LOCAL TOXÆMIC MANIFESTATIONS.

By P. C. REMONDINO, M.D.,

San Diego, California.

AS a primary etiological factor, uræmia is not sufficiently appreciated or understood; and as an intercurrent subsequent complication in other diseases, it is not sufficiently appreciated. Neither is toxæmia, either as a result of over-feeding, drink, unventilation or kidney inadequacy, as a social or physical degenerator, or as a moral or mental factor, sufficiently considered. The following case fully exemplified many phases of uræmic cachexia in one individual, both generally or systemic and locally.

The patient was a tall, powerful young married man of about thirty years of age. When I was first called to him he was supposed to be laboring under some form of acute malarial fever—at least the history of the case and the presenting symptoms gave such indications. The man was a general speculator by occupation, speculating and handling mines, stage lines, farming lands and live stock, an occupation that kept him pretty much in an out-of-door sort of a life. He had been superintending some placer mines on the ridge of the coast range that runs down into lower California, and while in those altitudes he was exposed to the very cold nights and hot days of the region. The food at those camps is not of the most palatable or satisfactory nature, which often induces many to depend too much on fluid refreshments, something which in those regions does not much resemble the nectar quaffed at a New York Board of Trade banquet; added to these was the absence from his family. He was here taken sick and then taken

down to the coast, where, finding no improvement, he took steamer and came to San Diego, the trip at sea being made over night.

I first saw the man two days after his arrival. He was then suffering with an intense frontal headache; stomach unable to retain any food, drink or medicine; face suffused, especially about the eyes, temples and space in front of frontal sinus; temperature about 103° in the day, and ranging up to $104\frac{1}{2}^{\circ}$ in the evening. He was constipated, with nearly total suppression of urine. The case very much resembled in many of its details those peculiar malarial mining region fevers that have a strong tendency to run into typhoid. The patient was extremely irritable; and as I did not at first fully appreciate the real nature of the case, I followed out a general method of expectant treatment, especially as it seemed already merged into typhoid. The patient gradually became worse, the irritability of the stomach, headache, pain over the eyes and in their vicinity gradually increased; with this came an utter inability to void urine or fæces, and the additional annoyance of alternations of extreme irritability of temper and of spells of stupor bordering on coma, but insomnic. The catheter drew off a little very strong, dark-colored and very heavy urine, not more than three ounces being secreted during the twenty-four hours, and with the aid of enemata a very small but offensive dark-brown passage was obtained.

On the third day of my attendance he became incoherent, and by night all fever seemed to have left him; but he was perfectly irrational, picking at the bedclothes, and delirious. I had in the meantime become convinced that I had a case of uræmic toxæmia to deal with; but the apparent typho-malarial complication did not allow me to act as I felt I should do in an uncomplicated case of uræmia. I called Dr. W. W. McKay, of the U. S. M. Hospital Service, and Dr. T. A. Davis in consultation, who fully agreed with me on my views of the case. By nine o'clock the patient was maniacal; he insisted on being dressed, desiring to change his hotel. His wife, who had in the

meantime been sent for and who had arrived, could not prevail upon him in no way. He was now being dressed, and rambling in an incoherent way, determined on going out. His face was pale; all the suffusion had disappeared along with the tendency to occasional stupor; his pulse was small and gaseous, and it looked pretty much from the changes that had taken place within the ten hours as if we should have a case of collapse and death on our hands unless he could be controlled.

On full consultation it was agreed to give him fifty grains of chloral hydrate and twenty-five of bromide of sodium, which he was, with some machination, induced to swallow. This potion he luckily retained, the constant nausea having also disappeared, and we had the satisfaction of seeing him fall into a sound sleep. He was now undressed and returned to his bed; his pulse improved, respiration became natural and regular, waking up in the morning with a clear head, but with a perfect unconsciousness as to what had happened for the previous forty-eight hours. The temperature, which had fallen during the maniacal spell—for it was nothing less than an intercurrent attack of uræmic madness—had again reached 103°. The mania was not precisely as described by Lancereaux, "mild, calm and transient;" it was calm, not noisy; mild if allowed his own way, but most essentially persistent and wilful, being somewhat restrained and kept within bounds by the presence of three strong men who remained with him until he fell asleep. Open warfare was really only avoided by humoring and slowly dressing him, during which the chloral and bromide were quietly taking effect, and the patient was flattering himself that he was having his own way. As observed by Lancereaux, it was, however, the summing up of all the uræmic conditions of the man, it had been preceded by insomnia—as the partial stupor was not sleep, of which he greatly complained the need. He also had those peculiar hallucinations, that plots were being formed against him, and positively refused all food or drink, the medicine being smuggled into him on pretense that it was a potion calculated to make him strong and that would enable him

to reach the hack which would transport him elsewhere. This so chimed with his ideas that he took it down at one gulp.

In the meantime all had been done in the way of attempting to re-establish the urinary secretions, but without any success; cups over the lumbar regions and dry cups on the dorsal region; sponge baths with borate of soda had been freely used, followed by anointing, but the fear of the typho-malarial complication prevented me from using two remedial means in which I place great confidence—venesection and active catharsis.* These are in uræmia of the greatest value, but in any typhoid condition of most positive harm. The question naturally suggested itself, was the typhoid condition but a simulation, and was it but a phase of the uræmia? Also, was the uræmia the initial cachexia, or was it consequent to the malaria? Could the questions have been satisfactorily settled it would have greatly simplified that of treatment; but with any doubts and with strong reasons for their foundation, any energetic treatment such as uræmia imperatively demands, were altogether out of the question. I felt compelled to temporize. Whatever could be done toward relieving the uræmic condition was done provided it did not place the patient in danger from the typhoid complication, the difficulty of really knowing which was the primary and which was the secondary, making such precautions absolutely necessary.

The patient now went into a three weeks' siege of continued fever, in which headache, partial coma, slight occa-

* In the lower California highlands we find that peculiar anæmia which even in health is so common to the Mexican plains of high altitudes. In these localities, without the intervention of any necessary malaria or apparent zymotic factors we observe sporadic or epidemic typhus—which at times has nearly depopulated the plains of Anahuac—when the cases are sporadic it is hard to discriminate between malaria, typhoid or dengue. The same hemitic condition, but in a modified form, contributes to cloud the etiology of the fevers, which in summer affect Guaymas and other Gulf of California ports, which, while assuming the character of a malignant typhus—are often mistaken from their fatality—to be yellow fever. From this, it will be easy to understand why the lancet or drastic cathartics were dreaded and not employed in the case.

sional delirium, and a temperature running from 101° to $104\frac{1}{2}^{\circ}$, with a very slight secretion of a strong odored urine, resembling heavy beef tea, were the accompaniments. The man was perfectly helpless; complete inanition of bowels and bladder existed, the catheter and syringe being required continuously, and the limbs were, as it were, paralyzed. He was perfectly helpless, and had to be lifted bodily, the only exception to the above being that on a few occasions during the third week he both urinated and defecated in the bed, but on the next subsequent operation of either bladder or rectum, the former means had to be resorted to again. The urinary secretion began perceptibly to increase by the end of the third week, and with this came an amelioration of all cachectic symptoms. The constant nausea, which had returned with the subsidence of the mania, gradually disappeared, the limbs slowly regained their sensation and power of motion, and the function of the bladder and rectum as slowly returned. The patient had in the meantime exhibited some surface symptoms which have only been noticed in regard to the face, which bore that peculiar suffusion about the line of the supraorbital ridge which seemed as if the soft tissues were actually hypertrophied, especially above the nose. There was a marked disposition to stasis or stagnation of the circulation in any dependent part of the skin, and the discoloration about the buttocks, sacrum and back at times assumed that dull, livid hue so observable at a post-mortem appearance, which was not a little alarming. The penis was ensheathed in a long, pendulous, leathery prepuce. It was an unusually large and pendulous organ, and always more or less dark and livid from the slowness and stagnancy of the circulation within its lax tissues, even after the secretion of urine became partly re-established. I am satisfied that the further impediments offered to the return circulation by the pressure at the neck of the bladder would, but for the repeated and careful use of the soft catheter, have resulted in sloughing of the organ. After convalescence was established, several pyæmic and anthrax-like abscesses were opened on his thighs and legs.

After his temperature had been down to 99° for several days, an unfortunate accident occurred. The nurse left him alone with his wife, and he had the indiscretion to allow his animal passions to obtain the mastery. The resulting nervous excitement and renal disturbance at once re-established the uræmic condition, and his temperature ran up to 104° , where it remained for several days.

The case as seen in all its phases, as they could afterward be summarized and compared, has convinced me that it was from the first but a case of acute and violent uræmic toxæmia due to renal insufficiency. How much the hepatic organs may have had to do in increasing the amount of toxic material, or in doing so to that extent that the kidneys were unable to cope with it, is another question; but on a retrospection of the case I am satisfied that a full venesectional depletion and an active elimination from the intestinal tract, without any efforts at reducing the fever with the usual means, would have resulted in cutting short the disorder. As it was, the man had a very narrow escape, not only from losing his penis or becoming a permanent mental or physical cripple, but even of suddenly having his existence cut short. It was a very interesting and instructive case to me; it showed in the end just what uræmic toxæmia can and does often accomplish, and shows also, beyond a question of doubt, that insanity may often be but of purely uræmic origin. The sudden disappearance of all febrile symptoms, physical and surface, was particularly marked when the mania supervened, which teaches that purely acute mania from uræmia may be present without the least febrile appearances; the accentuation of the uræmic effects on the brain apparently having determined the toxic element from such centres as otherwise would have manifested its presence by febrile exhibitions.

The man was not of a sensitive nature, either physically or mentally; in fact he was quite the reverse, being not in the least what the Latin races recognize as "sympathetic." He was not an educated man, extremely ignorant, selfish, with that peculiarly hard, strong, flinty-hearted disposition that Fontenelle deemed so essential to a lasting and strong

vitality. He was intensely animal and as intensely unfeeling, unsensitive and indifferent to public or private opinion or to the right or welfare of others. He was intensely acquisitive and avaricious. In speculating upon the above characteristics I am satisfied that with the same attack or uræmic condition a more generous or sensitive-minded man might have become permanently insane, while a person of a more sensitive physical and nervous organization might have come to an end with uræmic convulsions.

In many ways it was one of the most instructive and interesting cases I have met. It was decidedly unique in most of its complications of symptoms and the manner of their presentation. Since the advent of antipyrin and other antipyretic agents, I have more than once seen sudden heart failures and deaths occurring in the practice of routine physicians who are more intent in disposing of a surface symptom than in studying the disease and its intricate etiology. On a retrospective view I clearly perceive that the majority of these cases were those in which decided uræmic manifestations were present, from which it is evident that any antipyrin in such cases simply arrested the further destruction, combustion or elimination of the uræmic toxic agent, and which allowed it suddenly to overcome either the nervous centres or the heart, thereby suddenly stopping life. The case showed further the needs of our better understanding the physiology and pathology of the hepatic functions, as it also shows that very serious disorders arising from an apparent renal insufficiency might be precipitated from a suddenly perverted hepatic action, the kidneys being perhaps simply unable or incapacitated from excreting the suddenly-formed surplus toxic material offered, and which will either produce a paralysis or a dam in their structure; for in a young man of his previous and subsequent health, it is hardly likely that the attack in question could have been the result of any organic renal inadequacy affecting both organs. In the case in question, both kidneys were undoubtedly only functionally inactive, and the primary cause of their inactivity, insufficiency or

inadequacy is an etiological and pathological question unsolved and full of interest.

The contemplation of the case opens up a vast field of thought, as useful as it is interesting; of a like interest to the neurologist as to the general etiologist and pathologist, and of sufficient interest to the sociologist and moralist. The case was in many points an accentuation of uræmic intoxication and of approaching localized tissue degeneration; that the same cachexia, but in a less pronounced degree, may in proportion to its degree of existence develop different physical, moral or mental traits or conditions, cannot be doubted. It, therefore, suggests itself that any cause that may in any degree become a factor of a uræmic or toxæmic condition should be studiously guarded against. Again, how many mental and physical diseases may there not be whose initial point has its origin in slight uræmia?

TREATMENT OF SCIATICA AND OTHER NEURALGIAS.

Mordhorst (*Therapeutische Monatshefte*) claims that the diagnosis of sciatica is not always easy. Inflammatory thickening of the rectus femoris and other muscles, and rheumatic affections of the trochanter major and others around the hip, and especially in the tendon of the tensor vagina femoris, often small masses varying in size from a lentil to a bean—urates, probably.

In cases of neuritis the treatment essentially consists of a hot bath fifteen minutes to one hour in duration and followed by rest in bed for another hour, and to be followed by electric massage, per author's method. This consists of the cathodal application, surface area 100 cm., to the sciatic notch, while a revolving cylinder connected with the anode is passed down the limb along the nerve, with decided pressure, and returning with slight contact, to prevent break in the current. Strength of current, five to ten milliampères. Thirty-six cases were treated; thirty recovered, six improved. Average length of treatment, three to six weeks.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

<i>From the Swedish, Danish, Norwegian and Finnish:</i>	<i>From the Italian and Spanish:</i>
FREDERICK PETERSON, M.D., New York.	WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.
<i>From the German:</i>	<i>From the Italian and French:</i>
WILLIAM M. LESZYNSKY, M.D., New York.	E. P. HURD, M.D., Newburyport, Mass.
BELLE MACDONALD, M.D., New York.	<i>From the German, Italian, French and Russian:</i>
<i>From the French:</i>	F. H. PRITCHARD, M.D., Norwalk, O.
L. FISKE BRYSON, M.D., New York.	ALBERT PICK, M.D., Boston, Mass.
G. M. HAMMOND, M.D., New York.	<i>From the English and American:</i>
<i>From the French, German and Italian:</i>	A. FREEMAN, M.D., New York.
JOHN WINTERS BRANNAN, M.D., New York.	<i>From the French and German:</i>
	W. F. ROBINSON, M.D., Albany.

PATHOLOGICAL.

EXOPHTHALMIC GOITRE WITH MENTAL DISEASE.

In the "Medical Age," June 10, 1891, Dr. Chas. H. Hay reports three interesting cases of Grave's disease combining the symptoms of many angio-neurotic conditions. In all the memory remained intact, while the other mental functions suffered. The cases, the writer states, illustrating extreme effects of this disease, serve as a lesson to the effect that if neglected, such patients may become insane or the subjects of other grave diseases dependent upon the alterations in the blood vessel system. Since a certain proportion of these cases become insane, the indication is to employ the same prophylactic precautions which are necessary in those hereditarily predisposed to insanity. Two of these reported cases were affected late in life and one is especially interesting because it illustrates that over mental strain or worry, Grove's disease, insanity, sudden œdema and effusions, pigmentation of the skin, symmetrical gangrene and finally dementia itself, with a singular escape of the memory sense, may be successive pathological conditions occurring in the same individual and more or less dependent upon each other.

A. F.

REPORT OF A CASE OF LINEAR CRANIOTOMY
FOR MICROCEPHALUS.

Dr. J. C. McClintock, of Topeka, reports in the "Kansas Medical Journal" for August, 1891, the following case:

The subject, Hellena C—, was three years and eight months old, though she had the appearance of a child not over one year of age, was prematurely born at eight months. The mother says the labor was rapid, natural and easy, and no instruments were used. For several weeks she appeared as other children, but the anterior fontanelle closed early, from which time the frontal portion of the skull did not develop and the child seemed as an idiot.

Her general nutrition was very much interfered with and no muscular power developed. She could scarcely raise her hands or feet, has never been able to sit up and has required the constant attention of her mother from birth to the present time.

The appearance of the child is well shown in the engraving here presented.



FIG. 1.—From photograph taken before the operation.

The head was very narrow, the forehead low and the absence of intelligence in the face quite apparent. The protrusion of the right eyeball was undoubtedly due to the effort of the brain to escape from its narrow cranial walls, crowding down the orbital plate.

The child took chloroform very well and the operation was performed in an aseptic manner on March 28, 1891, in the presence of Drs. Pelton and Bailey, with the assistance of Drs. Lindsay, Shelton and Ward.

An incision was made from the glabella to the obelion, the scalp reflected each way and two trephine openings made near the posterior superior angle of each parietal bone, one on each side of the longitudinal sinus, and from thence with Keen's one-fourth inch rongeur forceps, a cut was made to a point immediately above the eyebrows.

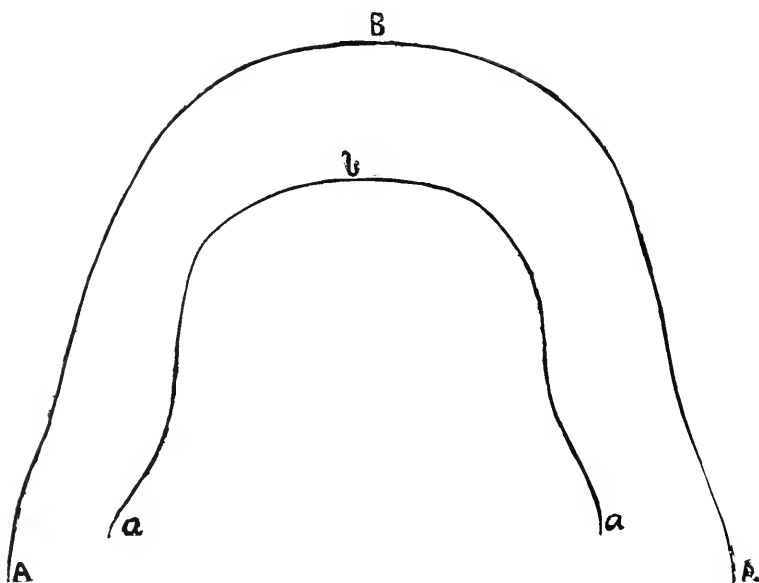


FIG. 2.—Line *a b a* is an exact tracing taken before the operation, from one-half an inch posterior to the external angular process of the frontal bone over the skull to the corresponding point on the opposite side of the head. *A B A* is the same line taken four months after operation, and showing the amount of growth of the skull in that time.

From thence the groove was carried directly outward. Again with the rongeur forceps another groove was carried directly outward and downward from the trephine openings, thus making two large flaps of bone which were raised by the tips of the fingers being passed into the groove and pulling directly outward and upward, spreading the one-fourth inch groove to a full inch on each side and leaving a bridge of bone one-half or three-fourths of an inch in width over the longitudinal sinus. The bone was very thick; at one place

on the left side it was fully one-fourth to one-third of an inch in thickness.

No hemorrhage was encountered during the operation, but what could be easily controlled by pressure. The dura was not opened. The parts were irrigated, cat-gut drains were laid in on each side, coming out at both the anterior and posterior angles of the wound, and the flaps approximated with catgut sutures. No antiseptics were used. The patient was put to bed and the next morning the temperature was found to be 103° , the pulse quite rapid. The dressing was changed and catgut drains removed. The temperature in a few hours subsided to normal where it remained, and a week later the dressings were removed, as they had become soiled from food having been spilled over them. At this time perfect union was found to have taken place throughout the entire length of the incision and two days later the child was dismissed from the hospital.



FIG. 3.—From a photograph taken two months after the operation.

The mother says that since the operation the child is not so restless as before, she does not cry nearly as much and has required much less attention and care. She takes a delight in stretching her limbs, exercising her muscles, raising her body, and when other children come near she will laugh and try to get to them to join in their play. The paralysis that was so apparent before the operation has now almost disappeared, so much so that the left hand is used almost as readily as the right.

A marked change in the child's appearance is shown in Fig. 3, from a photograph taken two months after operation.

PARALYSIS AFTER A SUBCUTANEOUS INJECTION OF ETHER.

Eberhart (*Centralbl. f. Gynäkol.*, No. 12, 1891), having observed cases of paralysis after subcutaneous injection of ether, has carefully gone through the literature and has succeeded in finding but few cases. In one case reported by Remak the patient, who lay comatose after poisoning by carbonic acid, received a subcutaneous injection of ether into the extensor side of the forearm. There resulted a partial paralysis of the radial nerve, which was limited to the extensor communis and abductor pollicis longus. Three years before he had observed a similar case, the muscles of the index finger only being spared, which required four months until the muscles recovered their power completely. He regards ether as having a specially deleterious action upon the peripheral, and especially here upon the deep branch of the radial nerve, after its piercing the supinator brevis. In Mendel's case the paralysis involved the third and fourth fingers, with reduction of sensation immediately after an injection into the extensor side of the right forearm. There was no reaction of degeneration, but the galvanic and faradic incitability were reduced. Restoration took place in three weeks. In a case of Neumann's the patient, a consumptive, received two subcutaneous injections, one into each forearm. The points of puncture became, on the third day, painful and swollen; on moving the hands there was painfulness of the extensors and diminished mobility of the middle fingers. The paræsthesia soon disappeared and the mobility of the fingers soon was restored entirely. The writer can only find these cases in the international literature. (There is a case reported in the "*Edinburgh Medical Journal*," 1890, of Local Paralysis after Ether Injections, where the writer collected several cases unmentioned by Eberhart. The Index Catalogue of the Surgeon General's Library at Washington, gives some cases which are also left out in the *Edinburgh Journal* article.—Transl.) The writer adds a fourth case to the list from his practice and calls particular attention to the danger of using ether injections in collapse during operations and childbirth, which point is by no means dwelt upon or even mentioned in the text-books. Schröder is the only writer who advises one to give the injection cautiously and not deeply. The writer administered, during the course of an operation for prolapse of the uterus, on account of collapse, a subcutaneous injection of ether into the right forearm. The next day it was

observed that she could not extend the third, fourth and fifth fingers. After forced extension the fingers would fall back into the half clenched position. Faradization was employed while she lay abed, but the paralysis remained unaltered. Only after four weeks she began to move her middle fingers and after six weeks was the mobility of the fingers restored. The writer, on account of the persistence of the paralysis, is of the opinion that the point of the hypodermatic needle must have struck a branch of the radial nerve, or that the ether set up a neuritis. Whatever may be the explanation, he advises greater care in the use of ether. Tincture of musk or oleum camphoratum may be used as substitutes, for they act fully as well as stimulants and have no such disagreeable side action. If one will use ether then one should inject where the nerve-branches are few in number and well covered by skin and fat.

F. H. P.

THE NERVOUS SEQUELÆ OF INFLUENZA.

According to Harold W. Moyer, in "Med. Age," August 25, 1891, the nervous sequelæ of influenza are mainly due to disturbance in the nutrition of the nerve centres and are usually functional in character. The direct lesions so often found after diphtheria, the exanthemata and other infectious disorders, are wanting. Neurasthenia is by far the most frequent disorder following influenza and is usually accompanied by severe pains and great depression, but differs in no other respect from those cases in which the cause is to be referred to traumatism, emotional disturbance, or other factors.

A. F.

THE PHYSIOLOGY AND PATHOLOGY OF THE ANAL REFLEX.

Rossolimo, of Moscow, in the "Neurologisches Centralblatt," No. 9, 1891, makes a communication on the physiology and pathology of the anal reflex. If one separate the buttocks from each other with the hands and touch the skin around the anus or its mucous membrane, a distinct contraction of the external sphincter takes place. If the stimulus be increased, the anus is drawn in and the glutei may even be drawn together.

This reflex has been made the subject of a special investigation on the neurological material of the Moscow hospitals, whereby he finds that—

It is *increased* in neurasthenic patients with augmented cutaneous reflexes in general; in transverse myelitis situated high up in the cord and, finally, in anatomical neuroses with increased functions of the sensory nerves;

It is *decreased*, respectively, extinguished in multiple neuritis, with extension of the process to the sacral plexus; in tabes dorsalis with disturbances of the organs of the true pelvis and with more or less pronounced anæsthesia of the anal region; in myelitis of the lower segment of the lumbar cord, which is most frequently combined with anæsthesia of the rectum, anus and urethra;

It is *normal* in functional neuroses of the bladder, respectively, those involving evacuation of the bladder; in neuroses of defecation and of the genital organs.

F. H. P.

MITRAL STENOSIS AND HYSTERIA.

Girandeau thinks that he has observed more or less grave hysteric phenomena in men who have for years, and perhaps since birth, suffered from mitral stenosis. This peculiarity he does not regard as striking, but ascribes it to a congenital weakness of the nervous system. These individuals present, also, other signs of congenital anomalies of development.—(Norsk Magazin for Sægevidenskaben, No. 7, 1891.)

F. H. P.

INTESTINAL ATONY AND BASEDOW'S DISEASE.

A recent number of the "Deutsche medicinale Zeitung" refers to the researches of Dr. S. Federn in this direction. He finds that atony of the bowels, especially of the large intestine, a condition frequently overlooked, is accountable for many of the ailments of the nervous system now attributed to other or unaccountable causes.

The condition is one which depends more particularly on a disturbance of digestion, as manifested by an intestinal catarrh, similar to the nasal catarrh due to polypus. That to this cause can be laid cardiac asthma, neuralgias and other neuroses there can be no doubt. He has found that Basedow's disease is in some instances directly traceable to intestinal atony. It is a disease due to irritability of the central nervous system resulting from disturbance in the function of some peripheral organ, generally of the intestines. This functional disturbance reacts upon the sympathetic and in turn upon the central nervous system.

If this as a cause of the disease is recognized the prognosis need not necessarily be a grave one. The author has had several cases of Basedow's disease under his care which he has cured in the course of two months treatment by massage and faradisation. In each of these cases he was able to trace the existence of intestinal atony, which indicated the treatment.

B. M.

LEAD PARALYSIS.

"Virchow's Archiv." Bd. cxx., Hft. 2, contains a pathological study of the nerves and muscles in this disease, by H. Eichost, notice of which appears in the "Centralblatt für klinische Medicin," No. 25. In recent cases examined by Meyer and Moritz alterations were found in the intramuscular nerves and muscular fibres, but the spinal cord was found intact. The case specially reported was one of double extensor paralysis. Autopsy showed œdema of the brain, chronic lepto-meningitis of the brain and cord, with adhesions of the pia and dura throughout. Histological examinations of the nerves showed changes in the radial nerves and an abundance of nuclei in the white substance of Schwann and an almost entire destruction of the axis cylinder and medullary sheath. There was also considerable thickening in and around the blood vessels.

The question as to whether the peripheral degeneration was primary or secondary still remains unanswered, although the author offers the theory that perhaps the muscles and nerves succumb to the toxic influence simultaneously and that after a variable length of time the alteration or degeneration in the cord takes place.

B. M.

BRAIN SYPHILIS.

To properly study this subject, and its therapeutics, Prof. B. Tarnowski says that greater care must be taken in the selection of cases than hitherto. That the wide application of syphilis as a cause for almost all nervous diseases is misleading and that unless a close following out of certain lines is adopted confusion is sure to follow as to whether the case was one of syphilitic origin or not.

In a paper read before the Congress of Russian Physicians, "Neurologisches Centralblatt," this author says that his plan, before making a diagnosis of syphilis of the nervous system, is, first to exclude all cases which give doubtful histories and all those in which the symptoms are aggravated by the mercury treatment. The two nervous

affections which are almost always treated on the assumption that they are syphilitic are, *tabes dorsalis* and progressive paralysis. That these two diseases do occur coincident with syphilis, or syphilis with them, cannot be denied, but that they are dependent upon syphilitic infection is a theory which can be easily exploded when the fact of their incurability is considered, as against the curability of true brain syphilis. A careful diagnosis in the latter would enable one to render an otherwise uncertain prognosis favorable.

B. M.

DIGESTION ACTIVITY IN MENTAL DISEASES.

An article on this subject appears in an August number of the "*St. Petersburg med. Woch.*," by Dr. E. Grabe, in which he attempts to elucidate the question of nervous dyspepsia as he considers it the most important, because the most frequent, of the neurasthenic indigestions due to functional disease of the nervous system.

In examinations of the stomach contents in a number of psychoses, over a given time, it was found that the mental condition had much influence on the general economy. Leyden's conclusions on this subject after making observations during health and disease, were that the functions of the stomach and appetite and digestion were under the influence of the central nervous system and that stimulation or depression resulted in alteration of function. It must then be accepted, that in a high grade of psychical disease, the stomach functions cannot be normal and that the resulting dyspepsia is therefore a neurosis. Notwithstanding some new views to the contrary, recent examination of the stomach juices in fourteen cases of melancholia, the patients being otherwise in general good health, showed hyperacidity, due to free hydrochloric acid and decrease of peptic formations. Hypersecretion was not, however, constant. Under such circumstances it is not surprising that appetite is lost in melancholia and allied diseases. Krafft-Ebing, in his text-book on Psychiatry, says that the explanation of the loss of appetite in dyspepsia, melancholia and hypochondria is due to the lessening in the quantity of, or chemical alteration in, the digestive fluids. In the twelve cases of mental disease, examined by the author as to the condition of the stomach secretions, all were found to contain free hydrochloric acid and lessened peptonoid products.

The irritated state of the nervous apparatus in the various forms of mental diseases seems then to be responsible for the secretion activity of the stomach resulting in the

production of hydrochloric acid. It is the author's intention to make further investigation as to the constancy of these functional alterations in psychoses. B. M.

SPONTANEOUS SHEDDING OF THE NAILS IN DIABETIC PATIENTS.

Prof. Auché, in the "*Rivista Clinica e Terapeutica*," No. 4, 1891, communicates the results of his studying the development of this phenomenon in diabetic patients. First a hemorrhage takes place into the tissue beneath the nail which, according to its amount, detaches the nail more or less extensively from its bed. If the hemorrhage be but slight, there appears a small and redish film; if more abundant, the nail is raised from its bed, remaining attached only at the extreme lateral borders, until a new nail forms when the old nail is cast off. The writer is inclined to regard the spontaneous hemorrhage as due to lesions of the peripheral nerves. His conclusions are as follows:

1. Diabetes mellitus, like *tabes dorsalis*, hysteria and various other affections, may, and often does, cause spontaneous shedding of the nails of the hands and more frequently those of the feet.

2. Shedding may take place in two manners. In certain cases the hemorrhage and detachment occur without any preceding symptoms or disorder, when the diagnosis between syphilis and locomotor ataxia would be, without the aid of concomitant symptoms, extremely difficult. In other cases subungual hemorrhage may precede detachment. In such cases, the mechanism is similar to that observed in certain tabic patients.

3. These hemorrhages are not only due to changes in the vessel walls, but also, in some cases, to lesions of the nerves found in the fingers. A. P.

CLINICAL.

VASO-MOTOR DISTURBANCES IN TRAUMATIC NEUROSES.

The groupings of such cases according to H. Kringe, (*Archiv. für Psychiatr.*), are (1). Cases of local hydrosis. (2). Cases of urticaria-like exanthems, which the author has observed to exist in two different grades: (a). As a distinct red band at the level of the skin, or as a prominent

protruding streak. (b). Primary infiltrations of the skin, similar to those caused by some mechanical impact or thermic influence. (3). Cases of local cyanoses, such as is to be seen in Reynaud's disease. The author thinks that these vaso-motor disturbances are distinctly characteristic of traumatic neuroses and that if they were dealt with on this assumption some of the absurd interpretations as to their cause would be avoided. B. M.

GASTRIC HYSTERIA.

In an opening lecture on Diseases of the Nervous System, published in "Anales de la Asistencia Publica," Buenos Aires, April, 1891, Professor José M. Ramos Mejia relates how a case of gastric hysteria was at first mistaken for acute peritonitis. The patient presented all the symptoms of the disease, such as pain over the abdomen, tenderness, tympanitis, small frequent pulse, elevation of temperature, facies abdominal, etc., etc. Inquiring into the family history, and after making a thorough examination of her physical and mental condition, the author arrived at the conclusion that the disease was nothing more than hysteria. Administering some sweetened water with care and taking pains to retain the confidence of the patient resulted in a perfect cure after several days treatment. W. C. K.

THERAPEUTICAL.

THE REFLEX ACTION OF THE TRIGEMINUS AS A THERAPEUTIC AGENT.

Dr. Kurt, in the "Deutsche medicinal Zeitung," of May 7th, suggests a method for controlling spasmodic conditions due to motor neuroses. Recognizing the fact that the application of certain irritants to the peripheral endings of the trigeminus, particularly at the conjunctiva and the nasal mucous membrane, retards reflex motor action, he takes advantage of this therapeutic principle to utilize such drugs or medicaments as antipyrine, quinine and sugar. These he dusts with a camel's hair pencil either in the eye or nasal mucous membrane and asserts that he can thereby control the spasm of whooping cough, laryngo-spasm, facial contractions and some forms of epileptic attacks. B. M.

ARTIFICIAL NEURASTHENIA.

Dr. Von Pelizarva describes a condition which he has observed to come on in a patient undergoing the water treatment at mineral springs and to which he has applied the name of artificial neurasthenia. This condition has frequently been described as bath or spring fever, but the author of the present article says that it is undoubtedly a form of nervous disturbance resulting from the indiscriminate use of the bath and drinking of the mineral waters.

It is well known that there is a great difference in individual ability to react from certain shocks. At one time reaction from a cold bath would be prompt, at another there will be distinct loss of control of the will, shrinking and so forth, followed by depression and weakness. When such results obtain and the baths are persisted in the process will undoubtedly cause a lessening of the resisting power of the nervous system. When it is remembered how great is the number of people ordered to the baths by physicians and how many go on their own account and take a regular course of treatment, in spite of the discomfort it may cause, it is not to be wondered at that patients return with neurasthenia or an exhaustive neurosis. The condition is soon established and it is for this reason that the author urges upon medical advisers sending patients to the springs, and also upon the physicians attending there, greater care in the selection of cases destined to undergo regular treatment. Due to the lack of the necessary foresight in this regard, Carlsbad, Marienbad and Kissingen are prominent sites for the promotion of this form of nervous artificial neurasthenia. The original article treating on this subject appeared in the "*D. med. Woch.*," 27-91 and the abstract in the "*D. med. Z.*," August 18th. B. M.

TREATMENT OF POLYNEURITIS.

In an able article on Polyneuritis, published in "*Anales del Circulo Medico Argentino*" for May, 1891, Dr. Julio Mendez, of Buenos Aires, advises the following treatment:

At the outset, when fever is present, the author gives the salicylate of soda, which, in many cases, diminishes the temperature and allays the pain. For controlling the pain, hypodermic injections of morphia, phenic acid, etc., are recommended, or opium and other narcotics internally. Chloroform and other liniments are applied to the skin. Internally, the iodide of potash, with tonics and a nutritious

diet, is strongly urged. Warm baths, vapor and sulphur baths—along with massage and electricity, may be applied after disappearance of the hyperæsthesia. W. C. K.

TREATMENT OF ASTHMA.

Dr. Benjamin D. Martinez formulates the treatment of Asthma (*Anales del Circulo Medico Argentino*; Tomo xiv., page 351) as follows:

"During the attack the first indication is to calm the nervous action and for this I prescribe antispasmodics, in combination with anæsthetics, sometimes giving small doses of pilocarpin to relieve the bronchial exudation. After the attack I administer the iodide of potash along with lobelia. Of the former I begin with small doses, gradually increasing, taken in milk; of the latter, begin with five centigrams daily and increase to fifteen centigrams daily, in pill form." With this mode of treatment the author claims to have had excellent success in nine cases treated within a year, lessening the severity of the attack and in prolonging the interval between attacks. W. C. K.

HYPNOTIC ACTION OF URETHANE, SULPHONAL AND PARALDEHYDE.

From a study of twenty-six cases by T. Sidney Short, M.D., the following summary is made. Age or sex does not in any way affect the action of these drugs. They have little effect on sleeplessness due to pain. Five out of seven cases of heart disease were greatly relieved. In bronchitis with cardiac failure, they gave good or fair nights and will probably prove most useful in this class where opium is contra-indicated. In convalescence after pneumonia and enteric fever all these drugs proved of great service and after the first good sleep no further dose was required, the bad habit of not sleeping apparently being broken. Both urethane and paraldehyde have probably a more rapid action than sulphonal, although on five occasions sulphonal in 3ss doses produced sleep in fifteen minutes. On two occasions, however, sleep did not ensue for six or seven hours and in several cases the sleep seemed better the night after, than on the occasion of the first dose, even when only one was given. If the patient had been talking much in disturbed sleep for several nights before giving the drug, the sleep following seemed more likely to be accompanied by occasional wandering, than when given for complete absence of sleep.

Slight wandering was more likely to occur after sulphonal than after the others, and it stupefied the patient more than paraldehyde and certainly more than urethane. In one case after taking sulphonal gr. xxx. the patient seemed inclined to wander and talked nonsense before he went to sleep at all. In nearly every case in which any effect was produced drowsiness ensued the morning following and this feeling was most marked after sulphonal. Slight headache was produced in a fair proportion of cases and some giddiness in a few only. Following moderate doses no really disagreeable consequences were experienced. In one case a skin eruption appeared both after paraldehyde and after sulphonal, and in another after sulphonal. No noticeable effects were produced on the respiration, circulation or appetite and no case of cyanosis was seen. (Birmingham Med. Review, July, 1891). A. F.

ANTIPYRINE IN COMBINATION WITH BROMIDE OF AMMONIUM IN THE TREATMENT OF EPILEPSY.

Dr. Chas. H. Hay in the "Med. Age," July 25, 1891, reports ten cases and mentions twenty more treated by this combination, as first suggested by Dr. H. C. Wood. Only the most hopeless forms of epilepsy were thus treated and though in some it failed to affect the convulsion rate, in the great majority it markedly decreased the convulsive attacks. and after the bromide alone had proved powerless. Therefore he concludes that this treatment is to be highly commended, not only for its beneficent effect in lowering the number of convulsions in epilepsy, but also because by its use, the disagreeable gastric and general symptoms of bromism are avoided. The doses given were generally twenty grains of the bromide of ammonium with ten grains of antipyrine three times daily. A. F.

TREATMENT OF THE OPIUM NEUROSIS.

A monograph on this subject by Stephen Lett, M.D., contains the following general outline of the author's method of "Gradual Reduction." Having ascertained the amount of opiate consumed in twenty-four hours, calculate its equivalent in morphia and then dividing this amount by the number of times it is necessary for the patient to resort to it during the day, a fair approximate of a single dose is obtained. This is weighed, administered and its effects noted

in regard to the following points: Does it sufficiently sustain the patient? How long does its effect last? When will a repetition be necessary to prevent depression? In a few days accuracy is obtained, a basis of treatment instituted and reduction commenced. The guiding rule here is to remember that there is a point at which the patient remains comfortable for a certain number of hours. That point can be noted between the extremes of stimulation by excessive opiate and depression consequent upon too small a dose and upon the accuracy of adjustment of the dose to this point depends the ease or discomfort of the patient and the success in treatment. As the quantity taken daily gets less, the reduction must be more gradual so that it may require from four to ten days to withdraw a single grain. Where only one grain is being taken in twenty-four hours, great caution is necessary in removing this amount, to accomplish which the author usually occupies from three to four weeks, the final dose being brought down to so fine a point as $\frac{6}{10000}$ of a grain. No appreciable difference in the dose is noticed by the patient and no shock is produced on the nervous system. Dr. Lett advocates giving the morphine by the mouth, believing it less prompt in action, but more lasting.

A. F.

VENTILATION AND IMPURE AIR.

P. C. Remondino, M.D., in Transactions of the American Public Health Association, Vol. xvi., says: Among the poor there is an inherent tendency to infirmities, mental, moral and physical, due to deterioration caused by want, poor nourishment, anxieties and lastly, but not the least, the foul air that they continually breathe. Their physical and moral degradation is attributed to alcohol, but alcohol with them has become a necessity, owing to the morbid condition induced by foul air. This air has the same effect as alcohol or fusel oil, and the slow, steady effect on the nerves of the susceptible little child is to create a morbid irritability which later calls for alcoholic support. The bodies of these children have no more resistance or endurance than their brains; they are morbidly sensitive and age early; want has developed a precocious sharpness of instinct, and the foul air that has poisoned their blood has matured their sexual organs, while the rest of the physique lacks development. Bad air is more than sufficient to cause all these conditions without the assistance of alcohol, either in the child or parents, and the State should recognize this and assume the charge of these children.

A. F.

PURIFICATION OF DRINKING WATER.

The burning question of the present age is how to obtain pure drinking water. In reference to this subject I would refer to a paper recently read by Dr. O. Froelich before the Electro-Technical Society of Berlin, May, 1891, in which he says: "That the attempt to destroy bacteria by means of Ozone has been effected with water from Berlin and neighborhood and always with the most complete success. The sterilization test takes place, as is known, in the following manner: A few drops of the water to be tested are placed by means of a sterilized platinum wire on sterilized nutrient gelatine, contained in a sterilized reaction tube closed with a plug of cotton wool. If the water contains bacteria their cultures become visible in the form of opaque grains and tubercles, which continue growing. Even if by such experiments the sterilization of ordinary water is established, it is still doubtful if the less common bacteria, viz., those generating disease—typhus, cholera, anthrax, etc.—and their spores are destroyed. The question can only be determined by experts, although there is every indication that it will be solved in a manner favorable to ozone.

The ozonization of water acts besides in destroying noxious or disgusting substances or transferring them into harmless ones. Sulphuretted hydrogen is separated into sulphuric acid and water, ammonia becomes nitrate or nitrite of ammonia, iron is precipitated as ferric-hydrate, and finally, bacteria which generate decay are probably all killed. We have also good reason to assume that even the worst ordinary water can be made drinkable by means of ozonization. Disinfection by ozone has properties not appertaining to other methods of disinfection. In contradistinction to sterilization by boiling, ozonization is quicker and cheaper, and as opposed to disinfection by chemical means, such as sulphurous acid and chlorine, etc., it has the greater advantage of leaving no traces behind it in the water. Of course some ozone is absorbed by the water, but the amount is so insignificant that it is not perceptible to the taste. The ozone gas goes through the water, does its work, *i.e.*, kills the bacilli, probably completely, and leaves the water in the same condition in which it entered it.

"How much ozone is taken up by the water in passing through has not yet been established. Shortly, however, larger apparatus will be prepared which may be considered as models of water ozonization, from which can be deter-

mined the working power and cost of ozonization for any quantity of water.

"The solid earthy matter held in suspension by water is not affected by ozone; filtration will therefore be a necessity in the ozonization process. The filtering plants heretofore employed have served not only for the removal of the solid matter in suspension, but have also answered the purpose of collecting the greater part of the bacteria and this takes place generally by means of the coating of algæ which is formed on the layer of filtering material. The ozonization of the water, however, answers the purpose of the coating of algæ, but in a much more complete manner. The algæ cannot survive in ozonized water, as has been established by actual experiment, and therefore the laborious upturning of the filtering layer, which has hitherto been the practice in order to prevent the coating of algæ from becoming too thick, is done away with.

"The proper discussion of the ozonization of water can only take place after the cost of ozonization has been more exactly ascertained; nevertheless, so much is thus far apparent, that a fundamental discussion of this question cannot be avoided, particularly in cases in which good drinking water can only be obtained at great cost, bad drinking water, on the other hand, easily obtainable and by ozonization converted into good. The question further arises whether, generally considered, impure water, such as the waste water of towns and factories, cannot be fitly treated by means of ozone. In waste water the bacilli generating decay would in this manner be killed, the ammonia probably converted into nitrate of ammonia and the organic constituents further oxidized as far as possible."—(*Elektrotechnischen Zeitschrift*, 1891, Heft 26.) C. B.

PSYCHOLOGICAL.

THE ACTION OF STRYCHNINE UPON THE CEREBRUM.

Biernacki has investigated the action of strychnine upon the cerebrum. Hithertofore it has been held almost as a dogma that strychnine has no influence upon the cerebrum, but only upon the gray substance of the spinal cord and medulla oblongata. According to Biernacki, this is not correct. He found in rabbits, even after the subcutaneous injection of small doses of the nitrate of strychnine, that the

electric excitability of the cerebrum was distinctly lowered. The same effect was produced by bringing strychnine directly into contact with the cerebrum. Therapeutically, the results of these experiments seem to cast light upon the curative action of strychnine in cortical epilepsy and other irritative conditions of the cortex cerebri. Lauder Brunton's recommendation of the remedy in sleeplessness also finds herein its explanation (*Therapeutische Monatshefte*, Aug., 1890). Paulsen has also investigated the influence of strychnine upon the nervous system (*Strychninets lammende Virking, The Paralyzant Action of Strychnine*; *Nordiskt Med. Arkiv*, 1889; Bd. 21, No. 9). He finds that large doses cause a general paralysis of the central nervous system. Benedikt's communication on "Strychnine as an Antiseptic," abstracted in the *Norsk Magazin for Sægevidenskaben*, 1890, p. 760, is also cited as confirming Biernacki's results.—(*Norsk Magazin for Sægevidenskaben*, No. 7, 1891.) A. P.

THE EYE IN THE INSANE.

M. Roger read a paper on this subject before the French Congress of Alienists, and arrived at the following conclusions:

1. The insane present no pathognomonic ocular lesion.
2. With the right-handed the right eye, and the left-handed the left eye, is the one most generally affected.
3. As a rule, insane with ocular affections are subject to hallucinations.
4. The proportion of insane affected with eye disease is about 33%.—"*Le Progrès Medical*," August 15, 1891.

W. C. K.

EPILEPSY.

Frank P. Norbury, M.D., (*Medical Age*, July 10, 1891) considers that epileptics, as a rule, are religiously inclined and he believes the religious history of the world has been greatly influenced by this disease. He says Mohamedanism owes its popularity and great influence to it. It was epilepsy which held before Mohamed's eyes and made to sound in his ears the hallucination which led him to believe he had a message from God. The dogged persistence, brute-like cruelty and lack of human justice of Napoleon I. no doubt had epilepsy for a basis. Reading the history of his memorable campaigns, we find the word impossible never entered therein; and Talleyrand and others speak of

his spasms, madness and distorted judgment. At Waterloo, during the critical period of the battle's progress, not a word of command or advice could be obtained from him, for he sat mute, utterly regardless of surroundings, and it was only by forcible removal from the field his life was saved. What, asks the writer, would have been the political aspect of Europe to-day had it not been for Napoleon's epilepsy?

A. F.

Asylum Notes.

BY MARGARET A. CLEAVES, M.D.

PENNSYLVANIA—A NEW STATE ASYLUM.

The bill providing for the selection of a site for the chronic insane, to be called the State Asylum, and appropriating \$500,000 therefor, has been approved by the Governor. The following Commission to select the site and build the hospital has been appointed by the same power: Dr. John Curwen, Warren; Wharton Baker, Philadelphia; Hon. John B. Storm, Monroe Co.; Hon. John M. Reynolds, Bedford, and Henry M. Dechert.

PENN. HOSPITAL FOR THE INSANE.

There is in course of construction by the managers of this hospital a new wing which is to be completed in October and will provide room for forty additional women. The vacancy caused by the resignation of Dr. Brush to accept the superintendency of the Moses Sheppard Asylum, has been filled by the appointment of Dr. A. R. Moulton, recently Inspector of Institutions of Massachusetts.

Dr. Moulton, who paid a brief visit to England during the summer, in the interests of his work, entered upon his duties at the Pennsylvania Hospital, August 15th, 1891.

APPOINTMENTS.

Dr. James W. Babcock, Assistant Physician at the McLean Asylum in Somerville, has been appointed Superintendent of the State Asylum at Columbia, S. C.

Dr. Carlos J. MacDonald, President of the State Commission in Lunacy, has been appointed Lecturer on Mental Diseases at the Albany Medical College.

THE JOHNS-HOPKINS HOSPITAL AND THE CLINICAL STUDY OF INSANITY.

During the past year the Superintendent, Dr. Hurd, of this hospital, delivered weekly lectures in the amphitheatre upon "Insanity in its Clinical Aspects," while one hour weekly was given to cases of mental disease applying at the dispensary.

It is by such work as this that the medical profession will obtain that familiarity with mental disease which will enable them to recognize it more often in its incipient stages, to supervise more intelligently its immediate treatment, and to judiciously advise as to the necessity for hospital care.

We trust that the Johns-Hopkins Hospital will develop this department of medicine to its fullest extent, as with the scope of its work and equipment it is fully able to do.

For the highest success in the development of psychiatry, it is imperative that the mass of the profession should have a much more varied clinical knowledge of insanity than they now possess. To this end, insanity and its treatment should form an essential part of medical education and examination.

STATE ASYLUM FOR THE INSANE, MORRISTOWN, N. J.

For the year ending October 31st, 1891, the net profit on the farm garden and dairy connected with this hospital was \$10,941.48, a profit, says the Warden, "which is most satisfactory and largely contributed to by the employment of patients' labor, under the supervision of intelligent employees."

To state in dollars and cents to what extent insane patients contribute to their support, not only appeals to but is comprehended by the average mind. But who can estimate the gain to the patients themselves? By employment their faculties are aroused to effort and persistently stimulated to action. Neither muscle, nerve nor brain are

strengthened by disuse, and employment for the insane, besides bringing a distinct pecuniary gain to the State, is absolutely imperative for the improvement and recovery of the patient.

Dr. Harris, the Medical Director, refers, in his report, to the influence of music upon disease, and especially mental disease, and says that of twenty-seven patients, members of the brass band for the year, thirteen were discharged recovered.

A careful and discriminating study of sulfonal and paraldehyde has been made within the past two years, the results of which were embodied in the "American Journal of Medical Sciences," for July, 1889, by Dr. Chas. M. Hay. Dr. Hay is now the special pathologist in place of Dr. Gilbert B. Plowtz, resigned.

Thirty-six autopsies were made during the year. The results in four cases of acute delirious mania are reported. They illustrate the marked vascular derangement found in such cases, also a distinct tendency for the brains to be of lower morphological structure, and further, presented distinct changes in the neuroglia and nerve cells. Upon the duration of the disease, the degree of the latter changes seemed largely dependent. Considering the condition of the vascular and lymphatic systems, this is what should be naturally expected. In the arrangement of the cerebral cortex there were some alterations sufficiently rare to be of note.

STATE HOSPITAL FOR THE INSANE, MILWAUKEE, WIS.

At this hospital the percentage of recoveries during the last biennial period was forty-seven per cent. Dr. White, the Superintendent, attributed the increase in the recovery rate to the systematic employment in operation during that time. He has demonstrated to his satisfaction that mat and basket making are available in cases heretofore considered incapable of any organized effort, and says that "it has proven to be one of the most valuable adjuncts to the ordinary treatment in recent cases undergoing convalescence, by engrossing their attention, weaning them from their delusions, dispelling their depression of mind and tending to a reestablishment of healthy functional activity generally. Dr. White's point of view is eminently a correct one and he is to be congratulated upon his success in intro-

ducing a new industry into his hospital. There are always patients, both men and women, in every hospital averse or unsuited to the manual labor of farm, garden and house, yet for whom employment is absolutely essential.

A training school has been established in connection with this institution and a class of five women was recently graduated. The fact that the care of insane patients by attendants is as much, if not more, companionship than custody, is coming to be recognized, and intellectual and social qualifications are more and more sought after. In addition to the regular night watch, Dr. White has a service of night nurses who, from 7 P.M. to 6 A.M., are on duty constantly, waiting upon the sick, allaying the fears of the timid, changing and bathing the filthy, and exercising unceasing vigilance over all patients, with a view to preventing possible attempts at suicide. This service must be of great comfort to the patients and afford the physicians at least a degree of relief from an anxiety that is never ending.

The Turkish bath, which has been in use for over a year, has been found a useful adjunct in the treatment of patients.

For the past year the hospital has had the services of a consulting board of eight physicians and surgeons. Dr. White finds they have proven a most valuable acquisition to the hospital, materially increasing its usefulness. Dr. Nicholas Senn is a member of this board.

At a recent conference held by the State Lunacy Commission and Superintendents of State Hospitals for Insane, of New York, it was decided that the State hospitals for the insane should be permitted to receive private patients from any part of the State without restrictions, except those prescribed by law, at a rate not to exceed \$10 per week.

It was also agreed that there are too many patients idle in the State hospitals; and, further, that they might be employed in the promotion of their own improvement and in the better administration of the hospitals, by taking up some industry that may serve the purpose, such as the making of brushes, brooms, mats, rugs, straw braid, baskets, wooden ware, willow ware and other articles, and it was resolved that steps should be taken to that end.

Both the State and her insane are to be congratulated on the step taken by this conference.

At the Manicomio in Rome, which it was the writer's privilege to visit not long since, aside from the patients

employed in the daily household avocations, three hundred men and women were employed in the laundries; men were employed in the carpenter's, boot-maker's and brush-maker's shops. All the cotton, linen and wool used for clothing was woven in the institution; blankets were woven, stockings knitted, clothing made and mended; rag carpets were also woven, and mats and matting, by the yard, were made from Spanish grasses. These latter articles were sold to the Roman merchants.

FRIENDS' ASYLUM FOR THE INSANE, FRANKFORD, PHILADELPHIA.

The last report of this institution, now before us, is a very attractive one, contributed thereto by the half dozen excellent photographs which adorn its pages. These consist of views of the main building, of the grounds, of the new gymnasium and employment building, and three interior views of the latter, representing the gymnasium, the work room and the modelling room.

The "Gymnasium and Industrial Hall" is substantially and handsomely built of gray stone, pointed; is finished internally with native hard woods and comprises, besides a spacious hall fitted up for gymnastics, work shops, art rooms, parlor and reception rooms. The gymnasium is in charge of Dr. Carolyn Luadd Hall, a pupil of Dr. Sargent, of Harvard University, and for some years directress of the gymnasium in Bryn Mawr College.

Classes of both male and female patients have been formed, as well as of attendants. Admission to the classes is governed by physical examination. Of the work, Dr. Hall, the Superintendent, says, "The moral effect observable, as well as the increase of physical vigor, strongly commends this form of exercise and recreation, whilst the general improvement in a few cases has been quite marked."

Under the direction of a graduate of the "Pennsylvania Museum and Industrial School of Art," the classes in drawing, painting in water colors and modelling in clay have made commendable progress. As advance is made, wood carving and the use of tools is to be added.

The Frankford Asylum is to be congratulated upon the acquisition of this building and the means with which to carry on the work of physical culture and congenial employment for its inmates.

Aside from the great need that exists for the employment and diversion of insane patients, there is often found among them much of special talent, and even genius, which should be cultivated.

Dr. Anna E. Broomall, of Philadelphia, is gynæcologist of this asylum.

A graduate of the McLean Asylum Training School for Nurses, Somerville, Mass., began last October to give preliminary instruction in some of the duties of nurses to the staff of attendants, with the expectation, on the part of the asylum, of establishing a training school for nurses at an early date.

BELGIAN PRISONS AND MENTAL MEDICINE.

A service of mental medicine has been established in the prisons of Belgium, the decision having received the royal signature March 30th, 1891.

Prisons for the services of alienists are divided into three districts.

The first comprises the prisons of Gand, Termonde, Audenarde, Bruges, Courtrai, Furnes, Gores, Anvers, Malines and Turnhout. This district is in charge of Dr. Jules Morel, Superintendent of the Hospital for the Insane at Quislain.

The second district comprises the prisons of Louvain, Liège, Verviers, Huy Arlon, Marché, Neufchateau, Tongres and Hasselt, and is in charge of Dr. Masoin, Professor in the University of Louvain.

The third district comprises the prisons of Bruxelles, St. Gilles, Nivelles, Mons, Charleroi, Tournai, Namur and Dinant. This district is in charge of Dr. Semal, Medical Director of the Hospital for the Insane at Mons.

The rules governing this service provide, that so soon as informed by the director of the prison, that the conduct of a prisoner shows the least anomaly that leads to a suspicion of his mental condition, the alienist of that district must at once examine the prisoner and report result to the central administration. If he finds the prisoner insane he will at once give the director of the prison a certificate of insanity, as provided by the laws in operation.

Furthermore, the alienist is to have access to the papers of detention of the prisoners they examine and to any information concerning them in the power of the officers to give, which they may consider necessary in the performance of their duties.

And they may obtain, also, upon request, the judicial acts concerning the prisoners under their care.

The functions of the alienists are exercised by authority of the Ministry.

It is with pleasure that we call the attention of the profession to this matter. That there are a considerable number of prisoners who, from time to time, during their imprisonment, show signs of insanity, real or simulated, is well known. For the maintenance of discipline, it is necessary that, in the case of maligners, the administration should be promptly informed of the fact.

On the other hand, in the case of the insane, there should be equally prompt action that they may be placed under suitable treatment, preferably in asylums for insane criminals. That experienced alienists can better serve the interests of the State and the individual than others, goes without saying. In a country of such limited territory as Belgium, this service is quite possible. So far as we are informed it is as yet the only country to have established a service of mental medicine in its prisons. The movement is one worthy of great commendation, and one that might well be extended. In addition to its humanity, it offers abundant opportunity for the study of crime in its relation to mental abnormalities and disease.

It is the hope of Dr. Morel that it may help to a quick solution of the question of special asylums for criminal insane; for, as he justly says, "a great proportion of criminals are but lunatics."

SECTION OF PSYCHOLOGY—BRITISH MEDICAL ASSOCIATION.

At the recent meeting of this association, the opening address of the Section of Psychology was delivered by Dr. P. Maury Deas, Superintendent of Wonford House Hospital, Exeter.

In his address, Dr. Deas reviewed the matter of lunacy legislation in England for the past century, and followed with a critical analysis of the Act of 1890. In this analysis he points out—(1) Those enactments which seem good and useful; 2) those which seem unnecessary or useless; (3) those which seem positively hurtful and objectionable.

While he finds the new law defective, he believes that too much has been made of these defects, and that the only dignified course to pursue is to endeavor to carry out the

provisions of the act loyally, and to minimize rather than to exaggerate any difficulties which may arise. Still he regards the latest form which lunacy legislation has assumed in England as, on the whole, retrograde and disappointing.

Looking to the future, he thinks the following are the directions in which the reform should go :

"1. Insanity and its treatment ought to form an integral part of medical education and of medical examination.

2. No one should be allowed to grant a lunacy certificate without being possessed of satisfactory evidence of competency.

3. The same should apply, in a higher degree, to all seeking appointments as medical officers of asylums.

4. The appointment of district medical inspectors and of official certifiers, who should act in consultation with the medical attendant.

5. Inspection should take more the form of provision being made for more frequent visitation of individual patients by independent medical authority, and less of mere inspection of the asylum itself.

6. Diminution of the bureaucratic character of the Board of Commissioners and restriction of their powers, which are now extraordinary and unparalleled; and the Commissioners to form more a medical board, composed of men of special experience in the treatment of the insane, who should assume more responsibility in dealing with individual cases.

7. Great modification in legal formalities. Medical officers ought to be relieved from all responsibility as to the correctness of certificates, orders, etc.

8. The cumbrous and costly method of finding a person insane by inquisition to be done away with, or much simplified, and the visitation of those so found to be secured by the same means as are provided for the insane generally."

Dr. Deas expresses the truth forcibly when he says in conclusion, "That for the sake of the insane themselves, as well as for the more effectual protection of their friends and the public generally against the consequences of insane conduct and impulses, the proper course is to rely less on legal forms and restrictions, and more on the careful, competent medical examination of the patient before admission, and the judgment and experience of the medical men to whose care he is entrusted, supplemented by the visitation of, and opportunity of consultation with, an independent medical authority."

The diagnosis of insanity and its proper treatment are emphatically medical questions, although they must necessarily be carried on under legal restrictions.

THE INSANE IN THE UNITED STATES.

According to the Abstract of Sanitary Reports of the United States Marine Hospital Bureau, May 29, 1891, the total number of insane persons treated in both public and private institutions during the year 1889 was 97,535, while during the year 1881 there was 56,205 treated, showing an increase in the nine years of 41,330, or 73.53 per cent. This percentage of increase, when compared with the percentage of increase of the population in the last decade, namely, 24.86, does not indicate an increase in the proportion of insane persons to population, but rather a great increase in the amount of asylum accommodation provided, and a willingness on the part of the public to make full use of all the facilities thus provided. The figures for the actual number of the insane in the United States cannot be determined until the work of eliminating all duplicate reports of cases has been completed.

In 1889 there were thirty-eight private institutions in the United States for the treatment of the insane—twenty-five located in the North Atlantic States, twelve in the North Central States and one in the South Atlantic States.

The ratio to each 1,000 inhabitants of the whole United States of the insane in public institutions is 1.46, and, including both public and private institutions, 1.56.—“Medical News,” July 11, 1891.

POLITICS AND HOSPITALS FOR THE INSANE.

In the August number of this JOURNAL, under the above caption, we find that our deductions were too sweeping, and that the assistant physician who was retained, “contrary to his expectations,” however, is an “uncompromising republican.” He is to be congratulated, both upon his political principles and his retention. But, after all, the congratulations depend upon the point of view.

CLASSIFICATION OF MENTAL DISEASE.

Dornblüth (*Münchener med. Wochenschr.*, June 2, 1891), makes the following classification of the primary forms of mental disease:

(1) Melancholia; (2) Mania; (3) Acute Insanity (*Verworrtheit*); (4) Acute Dementia; (5) Paranoia; (6) Periodical Insanity; (7) Neurasthenic Insanity; (8) Hysterical Insanity; (9) Hypochondriacal Insanity; (10) Epileptic Insanity; (11) Acute Delirium; (12) Progressive Paralysis (*Dementia Paralytica*); (13) Cerebral Syphilis.

Publisher's Notices.

The Congress of American Physicians and Surgeons held its Second Triennial Meeting at Washington on the 22d, 23d, 24th and 25th inst. What more directly interests the readers of the JOURNAL is perhaps the work accomplished by the American Neurological Association. There were over forty papers presented. Thirty of these were read and most earnestly discussed and appreciated. It is the opinion of all that were present that the meeting this year was the best so far held, and that scientifically, in importance of work, it certainly has accomplished in advancing neurology in many ways. The greater part of the work will appear in succeeding numbers of the JOURNAL, and it is worthy of careful perusal and study.

Attention was given to the subject of Brain Surgery and the various opinions of Drs. Mills, Knapp, Sachs, Keen, Lloyd, Nancrede and Bremer will prove of great service in future. Localization has its share of consideration, and the work accomplished in this direction by Dr. Mills will be of incalculable value.

Dr. C. L. Dana was elected President for the ensuing year.

The following is a partial list of the papers to appear in the JOURNAL:

President's Address, and an abstract of his paper; *a Case of Acute Spinal Paralysis; Death on the Twelfth Day, and Microscopical Findings.*

Polio-Myelitis Acuta Auditorum.—DR. WM. C. KRAUSS.

Ataxia following Trauma.—DR. F. X. DERCUM.

1. *Astasia and Abasia.*

2. *A Case of Tumor of Cerebellum, with Operation for Relief of Pressure.*—DR. PHILLIP COOMBS KNAPP.

Word Deafness and Lesion Accurately Locating the Auditory Centre.—DR. C. K. MILLS.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

ASTASIA-ABASIA.

WITH THE REPORT OF A CASE OF PAROXYSMAL TREPIDANT
ABASIA ASSOCIATED WITH PARALYSIS AGITANS.¹

By PHILIP COOMBS KNAPP, A.M., M.D.,

Clinical Instructor in Diseases of the Nervous System, Harvard Medical School.

THE earliest account of this curious and rare motor disturbance was given by Jaccoud in 1864, under the name of "Ataxia by defect of automatic coördination." Weir Mitchell, in 1881, reported a case under the heading of "Hysterical motor ataxia." Two years later Charcot and Richer described several cases under the title of "A special form of motor impotence of the lower limbs by defect of coördination relative to standing and walking." Other cases were reported by various observers, but it was not until 1888 that Blocq, collecting all the cases reported and adding several new ones, gave to the disturbance observed in these cases, eleven in number, the name "Astasia-abasia"—a name which has since been generally adopted. "We thus designate," says Blocq, "a morbid

¹ Read at the Seventeenth Annual Meeting of the American Neurological Association, held at Washington, September 22d, 1891.

state in which the impossibility of standing erect and walking normally is in contrast with the integrity of sensibility, of the muscular strength, and of the coördination of the other movements of the lower extremities." Subsequent observations have not served to alter materially Blocq's definition. The cases are still few; I have succeeded in collecting only forty-nine, and of these, thirty are reported by French observers. Only three cases have thus far been reported in this country, which may justify me in calling attention again to the subject, and in reporting a fourth case, which presents some of the symptoms of abasia, but which is not wholly typical.

Let me say first that *astasia-abasia* cannot be regarded as a morbid entity, like typhoid or tabes; it is rather a special symptom-complex, like *athetosis*, *chorea*, or *eclampsia*, occurring sometimes apparently independently, at other times being associated with other affections, such as *hysteria*, *exophthalmic goitre*, or the *intention psychoses*. As a symptom-complex and not as a morbid entity it must therefore be studied.

OBSERVATION I.—On the 25th of February, 1891, Charles Murphy presented himself at the out-patient department of the Boston City Hospital. He was born in Ireland, he had been a marble-worker, and he was fifty-eight years of age and married. His mother, one brother and one sister died of phthisis; his father died at seventy-nine of old age. Two brothers and two sisters are alive and well. No history of neuropathic taint could be elicited. His own health has always been fairly good; he had a mild attack of small-pox some forty years ago, and he had malaria and dysentery during the war; his habits are temperate, he has never used alcohol and he denies any venereal disease. In 1889 he had some catarrh, after which he began to have trouble in walking and what he calls "trembling" in the legs. At the same time he had some pain in the shoulders, chiefly over the upper part of the left trapezius and some difficulty in turning the head to the right. He has also had some cramps in the legs.

The difficulty in walking is as follows: while walking, when starting to walk, and especially when turning, he is attacked with spasm in the legs. He is very slightly bow-legged. The steps become shorter and shorter, and the

cadence is more rapid; there are rapid, almost rhythmical flexions and extensions of the legs on the thighs, and the thighs on the pelvis; the feet seem to cling to the floor; he rises slightly on the toes, carrying the trunk and head a little forward; the steps grow shorter, the cadence more rapid, suggesting the action of a locomotive on a slippery track. Finally the spasm becomes almost tonic, and the feet for a moment almost cease to move. At this point he exhibits a tendency to fall forwards, but he often recovers himself and he can go on with a natural gait. Excitement increases the trouble; it is very noticeable when

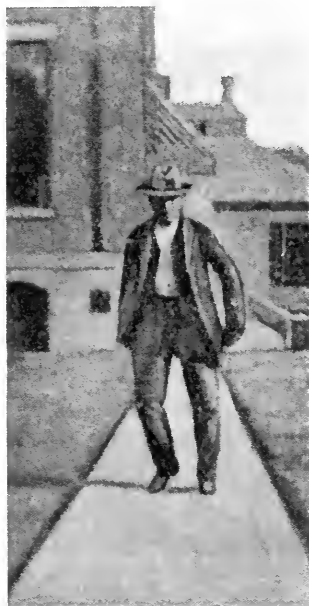


he enters a room, and it was once noticed in a very marked degree when he found himself in front of a team. He has a feeling of weakness, but there is no emotional disturbance, or any distress or anxiety during the attack. At times he falls in these attacks, most frequently falling backwards. Of late he has complained of a similar feeling of trembling in the arms, so that he cannot use an axe to chop wood.

He was somewhat depressed, from his inability to work, but no other psychical disturbance could be detected. His vision had failed a little, he was somewhat costive and the

sexual power was a trifle diminished. He had no abnormal sensations, but his limbs felt weaker. For five years he thinks his memory has failed.

The man was fairly developed and nourished. The head was carried bent a little forward, and the face was rather immobile, suggesting the facies of paralysis agitans. The pupils were very small, and on one occasion unequal, but they reacted normally. $Vod = \frac{11}{13}$, $vos = \frac{1.6}{10}$ —, $vos c + 0.75 = \frac{1.1}{1.5}$ —. The visual field was normal for form and color; the color sense was good. Further examination of the



eyes and ears was negative, as was examination of the chest, abdomen and urine. The reflexes were not remarkable. Sensibility in all its forms was everywhere good. All the ordinary movements could be performed with fair strength, and good coördination. There was no tremor, ataxia, or Romberg's symptom. The electrical reactions were normal.

On attempting to hurry him, to take him into another room for consultation, or to bring him before a class the trouble became more marked. It seemed to me that the spasm was largely dependent upon idea, and so, in order to break up the morbid train of association, I directed him, when

the spasm began, to practice the "balance step" of military drill. This arrested the spasm so effectually that it was hard to demonstrate it to the class two days later, or to demonstrate it before a medical society a week later. Unfortunately he heard me explain my theory of the action of the remedy and its efficacy declined. He was treated also with tonics, including strychnine and faradism, but there was not much more improvement and he grew discouraged.

At that time the trouble seemed to be very distinctly abasic, and to be confined chiefly to the legs. At my request he came to see me again on the 11th of September, 1891. His condition had grown worse since I last saw him in April. He had repeated spasms on walking from my waiting-room into my office, taking not more than four or five steps without them. The character of the spasm is unchanged, but he complains now much more than formerly of falling backwards, and a moderate pull or push will cause him to take several short quick steps backwards and to fall—a distinct retropulsion such as is sometimes seen in paralysis agitans. The forward movement has also more of the character of propulsion. He claims that this retropulsion has existed for eight months, but in February he had little to say about it. He complains also of a general trembling, which is worse in bed. He always feels warm, but not uncomfortably so, and his legs sweat freely. For six months he has had vertigo, objects apparently moving from side to side. He has much more general disturbance with the muscles; he thinks he cannot talk as well; the trouble in chopping wood is worse, he cannot write as he used, he even has trouble in holding a newspaper. He says that were it not for the "balance step" he could not get about at all. Aside from the muscular trouble he feels perfectly well.

The pupils are small, less than two millimetres in diameter, and react slightly to light, but more to convergence. There is no stiffness of the muscles of the neck, but he cannot move the head quite so far to the right, and there is a spot which is somewhat tender to pressure over the upper part of the left trapezius. There is no spinal tenderness. He can move the muscles of the face very well, but on making repeated movements of showing the teeth, after a few times the movements are made less regularly and there is a slight tendency to tonic spasm. The voice is feeble, rather monotonous and high-pitched. He can drum with the fingers quite well, but on writing, as will be seen, the spasm soon appears, and after the first few letters, the writing tends toward a series of perpendicular lines, made

with considerable difficulty. He used, he says, to write well. On attempting to hop on one foot or with both feet together he has much difficulty, and the spasm develops. He can go about on his knees or on all fours, apparently not very well, but he says without any of the "trembling" feeling. The muscular strength in the legs is fairly good. The grasp shows right = 13 kg., left = 15 kg. There is no tremor or incoördination of arms or legs, even with the eyes closed. Sensibility remains unimpaired. There is no cardiac or other distress with the attacks of spasm, but the pulse is a little rapid, 106. After a time the attacks were less frequent and he walked about my office for a number of steps quite well, the spasm appearing as he turned and as he prepared to sit down. The balance step can still be

Charles Murphy

Charles Murphy

Charles Murphy

Charles Charles Murphy

Handwriting of Charles Murphy, September 11, 1891.

performed during the spasm, and it seems to relieve it. There is no muscular rigidity or contracture and no tremor can be felt in the muscles. There is no albuminuria or glycosuria.

On the 15th the retropulsion was still more marked and quite characteristic of paralysis agitans. There was also much trouble on trying to turn. No tremor of the hands or legs could be detected, but there was occasionally a fine tremor of the head.

The diagnosis in this case is not entirely clear. There are certain affections from which abasia must be distinguished, but we need only to name them to render it evident that we have to do with none of them. Among them are tabes, disseminated sclerosis, Friedreich's ataxia,

alcoholic neuritis (with high-stepping) cerebellar vertigo, tic convulsif, paramyoclonus, Thomsen's disease, professional neuroses and the intermittent claudication of diabetes. It is more probable that the disturbance is due to minor "functional" or "dynamic" changes in the nerve-cells than to permanent gross lesions, otherwise the trouble would be more constant. Hence a spastic or ataxic paraplegia from organic changes in the cord is not probable, although the gait somewhat resembles the spastic gait. The absence of exaggerated reflexes, contractures and rigidity moreover renders spastic paraplegia very improbable.

Hysterical ataxia or hysterical paraplegia may be excluded by the absence of ataxia or paraplegia. Whether the present affection be hysterical must be discussed later, but there are certainly none of the stigmata of grand hysteria.

Rhythmical chorea may readily be excluded by the absence of any unusual movement when the patient is at rest.

Saltatory reflex spasm has been confused with abasia. and Thyssen and Cahen have considered one case (Obs. XL.) as abasic, which Brissaud, in whose charge it was, distinctly says was not in his opinion abasia, but saltatory reflex spasm. In this affection there are repeated contractions of the muscles of the lower extremity as soon as the feet touch the floor, which result in throwing the body into the air in a succession of leaps. It is plain that we have here no such condition. The spasm may also appear when pressure is made upon the sole when the patient is sitting or lying down.

To one who reads the report of the present case the resemblance to paralysis agitans would probably be less striking than if he were to see the patient. To-day, more than in the spring, there is a strong suggestion of paralysis agitans about him, in his facial expression, his attitude and the propulsion and retropulsion. I believe that in time he will develop into a typical case of paralysis agitans, but, if he does have the affection, it is paralysis agitans *sine agitatione*. If this be paralysis agitans it is associated with attacks of inability to walk, and with the preservation of muscular force and coördination, with ability, during the attacks, to make various coördinated movements akin to walking. Such a condition corresponds to the definition of abasia, yet I know of no recorded case where abasia occurred with paralysis agitans.

On the other hand, if the case be simply one of abasia,

it differs materially from other cases. In a few cases there has been some implication of the arms, but here there is a morbid state which seems to involve almost all the muscles. After a muscle has made a few contractions, a condition of spasm supervenes which prevents the normal, harmonious action. This is seen in the muscles of the face and in writing. It differs from the spasm in Thomsen's disease in that that appears at the beginning of muscular effort and diminishes. This, although in the legs it may appear in the beginning, in the other muscles comes on after several contractions and increases to a tonic spasm. It resembles the spasm in writer's cramp and seems like a writer's cramp affecting all the muscles of the body, but chiefly the legs.

My original diagnosis last February was abasia with a suspicion of beginning paralysis agitans. To-day my suspicion has grown stronger, and I think that time may show that the abasia was really a symptom of paralysis agitans *sine agitatione*.

Before considering the nature of this curious symptom-complex it will be well to analyze, as briefly as possible, the recorded cases, to furnish us with data for our judgments.

ABSTRACT OF REPORTED CASES OF ASTASIA-ABASIA.

OBSERVATION II.—(Blocq,⁴ from Charcot.) Girl. Father's family gouty; father died of myelitis. Mother's family rheumatic, gouty, alcoholic; grandmother neuropathic; mother rheumatic, nervous, hysterical. Child had convulsions while teething; neuralgia at the age of five, typhoid with convulsions at two and a half. Child fell while at play, striking her back; the next day she complained of pain in the back and difficulty in standing. Dorsal decubitus avoided; marked hyperæsthesia of back. Crises of pain at night. Walking gradually became impossible. Marked hyperæsthesia of the back and some of the thighs. The legs can be readily moved in all directions while in bed, but passive movements can not be easily performed on account of the hyperæsthesia. No ankle clonus or contracture. She can stand with support. She cannot walk, but she can jump a short distance with the feet together. Contraction of the visual fields. Recovery six months and a half after onset and eight days after treatment.

OBS. III.—(Blocq,⁴ from Charcot.) Boy, 14. Mother had migraine. He had an address to make, was very nervous

in consequence and had headache and weakness of the legs. The next day he could not get up, stand, or walk, but he could move his legs in bed. Other functions were performed regularly. Muscular strength and coördination in the legs was perfect. No anæsthesia or exaggeration of the reflexes. The boy could only drag himself along. Isolation. Two months after onset the boy could get about by jumping first on one leg then on the other. Two weeks later he walked normally. Four months later, without apparent cause he had another attack, lasting a month.

OBS. IV.—(Blocq.¹⁾ Boy, 15½. Mother and maternal grandmother rheumatic. In March, 1887, typhoid fever. On recovery he could not stand. When supported under the arms, the legs bent under him and could not support him. When sitting nothing abnormal could be detected in the legs. He could go on all fours, or hitch himself along in a chair, but he could not jump or hop on one foot. He could climb up a tree, but rather poorly. Since this illness he has not dreamed of walking. Nothing abnormal in the legs; sensibility in all its forms intact; knee-jerks lively; no ankle clonus; no hysterical stigmata; slight limitation of the visual field. Cure by transfer, June 27th, four days after entering the hospital.

OBS. V.—(Blocq.¹ from Romei.²) Boy, 11. Congenital strabismus. No heredity. Sudden severe fright. After this he kept in his room for two days saying that he felt weak. Then he had a severe headache which kept him in bed four days. On recovery he found that he could not walk or stand. Sensibility and muscular strength normal. Slight pressure on the spine was painful. Moved feet perfectly in bed, but he could not stand; legs seemed dislocated when he tried to walk with support. He walked like a child just learning. He recovered from this and a year later had rheumatism in the left foot. A year after this he walked bent over, had trouble in ascending stairs, his legs failed and he walked as if drunk. The dorsal vertebrae were tender. Four baths relieved the pain.

OBS. VI.—(Blocq.¹ from Weir Mitchell.³) Woman, 20. Asthmatic. Sudden loss of speech with unconsciousness and convulsions. Five weeks later a peculiar paraplegia. She could move the legs fairly in bed, but on standing or walking she swayed to either side, and her efforts to maintain herself were in excess and threw her to the opposite side.

OBS. VII.—(Blocq.¹ from Charcot.⁴) Boy, 15. No heredity. Well and strong. In 1882 hysterio-epileptic attacks

(arc du cercle, passionate attitudes). Recovery in 1883. Soon after anorexia and emaciation, followed by present trouble. Cannot stand or walk. Hands kept closed. Legs extended, stiffen at attempts to flex them. Voluntary flexion possible. Knee-jerks exaggerated. He can jump but cannot stand. On supporting him limbs stiffen at right angles to trunk. Voluntary coördination, except for jumping and voluntary flexion, is impossible. Considerable anæsthesia; achromotopsia.

OBS. VIII.—(Blocq,⁴ from Charcot.) Girl, 14½. Father sexual criminal, sister hysterical. Menstruated at 13½. Six months ago pain in left flank, later in back, followed by trouble in legs. Corset applied, patient was in bed for some months. One day ran, under stress of emotion, then became paralytic again. Spinal hyperæsthesia. Knee-jerks normal. No anæsthesia or loss of muscular sense. In bed legs are flexed and cannot be extended voluntarily. She can raise them from the bed. Legs can be extended passively, and unconsciously by the patient. On standing the legs remain half-flexed, without incoördination. The movements of walking cannot be performed.

OBS. IX.—(Blocq,⁴ from Erlenmeyer.¹³) Man, 28. No heredity. Previous history good. Overwork for ten months, followed by localized and general muscular twitchings, insomnia, and excess in the use of alcohol. Fell in the street and lost consciousness. Weak and sleepless for a fortnight after it. Two months later the left leg began to give out when walking. He recovered but the right leg was later affected. This was followed by a convulsive jump, the body being thrown into the air by the feet, as the knees gave way, followed by a certain number of regular jumps, the feet not quitting the earth, the body being thrown up when it was advanced. The legs were finally so flexed that the back of the thighs touched the calves. Knee-jerks exaggerated. No disturbance of strength or coördination. When the sole is put squarely on the ground the knee is flexed and the body makes a compensatory movement forwards. The jump is made only after the primary flexion of the knee. It is not seen when the patient is supported, nor is any movement caused by pressing on the sole while the patient is in bed. Sensation normal. Percussion of the ligamentum patellæ, while the patient is standing, will produce a similar flexion at the knee.

OBS. X.—(Blocq,⁴ from Babinski.) Woman, 27. Father neuralgic. Mother impressionable, had fits of rage in which she lost consciousness. Gastro-intestinal troubles. For

nine years headaches, gloomy ideas, nightmare, desire to weep, fear of solitude. In 1883, after some disturbance, could not stand on rising from knees. She made a partial recovery with two or three relapses. In December, 1883, had an attack after which she grew worse. In February, 1886, nothing abnormal noted while sitting. All movements could be performed, but she had a sensation of shock in the knees. On standing she had jerking movements, a flexion of the legs on the thighs, and of the thighs on the pelvis. In walking these movements increase, and become more rapid. She stops and tries to recover equilibrium. The trunk is flexed on the pelvis, the head is flexed and rotated, and the forearms are flexed on the arms. She is obliged to sit down, looks fatigued and sweats. There is no incoördination. She jumps and walks on all fours. The movements cannot be produced artificially when she is sitting or lying down. Slight left hemianæsthesia. Kneejerks almost absent. Visual field contracted on left. Hearing and taste diminished on left. Hysterogenous zones, pressure on which cause attacks of muscular twitching. Walking easier after attacks.

OBS. XI.—(Blocq,' from Babinski.) Woman, 22. Cousin insane. Irritable. Infelicity since marriage. Difficult labor two and a half months before. Some days later nervous crises, throbbing of the temples, constriction in the throat, loss of consciousness, rigidity of the limbs, followed by a feeling of fatigue. These crises resumed several times a day. Poor appetite. On recovery from confinement she could not walk. After taking five or six steps twitches begin in legs, which rapidly increase, so that she cannot stand. The thigh flexes on the leg and the pelvis on the thigh; the heel is raised, striking the ground two or three times. The patient tries to regain equilibrium and the trouble comes on in the other leg. The trouble increases, she walks, carries the foot back, but cannot advance, the legs flex and extend, the trunk is carried forwards and backwards, the feet striking the ground in a sort of marking time and she falls. Sitting, the muscular strength is good. Slight left hemianæsthesia and left ovarian tenderness. The trouble disappeared at once by hypnotic suggestion.

OBS. XII.—(Blocq,') Woman, 52. No heredity. Previous history good. Fell on her back, losing consciousness; in bed for three months. Six months after fall, without apparent cause, severe lumbar pain. On recovery, three days later, she found she could not stand. For two months she

could not use her arms at all, then they recovered completely, but the legs still troubled her. Anuria for three days. Pain and formication in legs. Lumbar pains persist. Anæsthesia of legs up to the groins. Reflexes normal. Muscular strength diminished but coördination is good. She can stand with great difficulty. When standing she has oscillations and flexion of the pelvis on the thighs and the thighs on the legs. On walking the knees are flexed, and the trunk is projected forwards and backwards. The feet do not drag. Standing and walking are impossible with the eyes closed. Trouble worse on the left. Right visual field contracted. Taste defective. Hyperæsthetic points.

OBS. XIII.—(Brunon.¹) Boy, 8. No heredity. Previous history good. After a slight febrile disturbance with eruption, it was found he could not stand or walk. His legs bent under him. In bed he could raise his legs with good strength. General condition good. No ataxia or sensory disturbance. Reflexes normal. Ten days later had gained strength. Staggered as if drunk. Two days after that took some steps with hesitation; could jump and make coördinated movements. Moved legs very slowly and walked like a young child. Rapid recovery.

OBS. XIV.—(Berthet.²) Woman, 25. Father alcoholic. Anæmic for eight years. Menses irregular, leucorrhœa. At seventeen began to be nervous. Impressionable; had palpitations and constriction of the larynx. At twenty-three had crises preceded by palpitations; in these she loses consciousness and cries and is weak after them. Fourteen months before had severe crises, after which she could not walk and vomited everything but oranges. Standing is difficult and walking impossible. If she stands she trembles, the body making great oscillations and the head and arms making rhythmical movements. After rest in bed she can use her hands in sewing, etc. Slight hyperæsthesia on left to pain, touch and temperature. Sight and hearing better on right. No motor trouble in bed and no ataxia. Tender points, pressure on which gives rise to dyspnœa. She got nearly well then had acute rheumatism, after which trouble returned. When she stands, walks or sits the oscillations return—undulations like the progress of a reptile. She falls, sweats profusely, there is marked dyspnœa and the limbs become inert. With a corset she can do better. She walks on all fours and hitches along on a chair. Intense hyperæsthesia, no pharyngeal reflex, convergence and light painful. Mild faradic current caused intense lum-

bar pain. No trouble when suspended. Trouble reappeared in bed when told to resist lifting the feet. In bed or sitting no trouble in legs, but some trouble in arms. Relief from cold douche.

OBS. XV.—(Grasset¹⁰—Mathieu.¹⁰) Man, 29. Nervous crises and convulsions in childhood. A year ago had loss of consciousness without diminution of intellectual force, with trembling of the legs. Similar crises since, with true hysterо-epilepsy. Pain and paræsthesia in legs. He has a dancing gait, has difficulty in detaching the right toe from the ground, leaps on it and advances in a painful manner, the body and head oscillating. Walking becomes impossible, the rhythmical oscillations increase, the heel repeatedly strikes the ground and he finally falls powerless. In bed he has no trouble. He can walk cross-legged or by raising the legs high or on all fours. Anæsthesia, loss of pharyngeal reflex, concentric limitation of visual field. After some attacks of abasia he has a marked procursive impulse without loss of consciousness.

OBS. XVI.—(Charcot.¹¹) Girl. Probable epilepsy for three years. Since that time she has been unable to walk without support. Cannot go up or down stairs. Fair strength in limbs. Reflexes normal.

OBS. XVII.—(Charcot.¹²)* Boy. Cannot walk, but can go on all fours and shin up a tree. Cure in three days. Hysterical cough and feeling of suffocation.

OBS. XVIII.—(Charcot.¹³) Man, 41. Neuropathic heredity. Night-terrors, migraine; timid, impressionable. Profound nervous shock three years before followed by crises of marked malaise and weeping. Poisoning by carbonic oxide; unconscious for three days. Leg burned by sinapism; insistent idea that he might be unable to walk. Legs grew weak and stiff and finally, twenty-five days later, he suddenly became unable to walk. Muscular strength in bed good. No rigidity, contracture or sensory disturbance. Kneejerks normal. No trouble while sitting and he can stand perfectly well. On trying to walk inclines forward, the legs together; rises on toes, which glide along the floor in a jerky tremulous fashion as if he were impelled forward. At the moment the knee is flexed to carry the foot forward, a contrary movement of extension occurs. He can jump with the feet together or on one foot, go on all fours or walk with a tragic stride.

OBS. XIX.—(Charcot.¹⁴) Man, 44. Grandmother nervous, mother alcoholic. Always nervous and emotional.

* Possibly the same as Obs. III.

Ten years ago severe nervous crisis after emotional shock. Crises at times ever since. Two years ago had a severe attack, lasting two days; on getting up found he could not stand. He could move his legs in bed. The trouble lasted four months. Seven months ago another crisis of trembling followed by the present trouble. He can move his legs perfectly in bed, he can go on his knees, on all fours, or hitch on a chair. There is no pain or rigidity. The reflexes are normal. He cannot stand at all, his legs giving way under him.

OBS. XX.—(Charcot.¹¹) Man, 49. Mother had spinal disease; cousin alcoholic. Night terrors. Eight years ago left hemiplegia, lasting a short time. Since then demented. Abasic for two or three years. He can walk at times and move his legs perfectly in bed. On starting to sit down or on rising he has a peculiar trembling, similar to that shown by patient of Obs. XVII. He can go on all fours or hop with the feet together. Contraction of visual field; no dyschromatopsia. Left hyperæsthesia. No pharyngeal anæsthesia. Taste, smell and hearing normal.

OBS. XXI.—(Charcot.¹²) Man, 75. No heredity. Previous history good. Six years before, without known cause, he had a feeling of weight in the left hip, and he had to carry his left leg forward first in walking. Eight months ago feeling of weight in the nucha and occiput and on the shoulders, and the trouble in walking extended to the right leg. In bed there is no trouble with the legs; no ataxia or anæsthesia. Knee-jerks normal. Stands well. If slightly pushed, sudden movements of flexion and extension in legs. The trunk is carried forward and the feet strike the floor as in Obs. XVII. He can stand on one foot, hop with the feet together or on one foot, go on all fours, perform the movements of swimming, and march in military fashion, marking time. Ordinarily now he walks with great strides with arms extended, striking the ground with a cane at every third step. Visual field normal. Later on he had nervous crises, globus, throbbing of the temples and loss of consciousness followed by weeping.

OBS. XXII.—(Féré.¹³) Man, 39. Sister hysterical. Had convulsions in infancy. Walked at the age of three. Night terrors, enuresis. Always weak in the legs, a poor runner. At the age of twenty-four had painful cramps in the right leg, caused by emotion. At twenty-six had general convulsions with clouding of consciousness and later complete unconsciousness. Vertigo. Paræsthesia right leg. Two years later, cramps and weakness of the legs. Right leg

smaller, left hand stronger. Sensibility slightly diminished in right thigh. He can make all movements with good strength when in bed, even with his eyes shut. On standing the legs flex beneath him. He can walk on his knees, get up and sit down and make the motions of walking if supported. Condition has lasted twelve years.

OBS. XXIII.—(Helfer.²⁰) A girl had erysipelas and parotitis after influenza, with hallucinations of smell, long continued vomiting and weakness. She could move her limbs in bed, but she could not walk or stand.

OBS. XXIV.—(Pitres.³⁰) Boy, 10½. Profound anger. Some days later convulsive attacks with contractures, photophobia, delirium. Incoherent, talked in negro dialect and used foul language. He was isolated and recovered. A month later he became unable to walk. He could move his legs in bed with much strength and the muscular sense was normal. If he stood up the legs flexed under him at once. He could stand on his knees or go on all fours. If he was suspended he could use his legs perfectly. If his feet rested on the floor he had pain in the knees and an approximation of the articular surface of the knees caused acute pain. There were islets of anæsthesia in the arms and shoulders. No sign of joint disease. Field of vision normal, sensation, except as stated above, normal. No hysterogenous zones. Cure by hydrotherapy.

OBS. XXV.—(Pitres.³⁰) Boy, 8½. Always well. Had a slight stomatitis, after which he said he could not stand, but he could move the legs with good strength. He recovered in two months. Two months later the trouble reappeared after a reprimand. He could stand a moment then the legs gave out. He took ten or twelve steps and then fell or came near falling. Contraction of the visual field. No other symptoms.

OBS. XXVI.—(Pitres. Boy, 11. Rheumatism in mother's family. Father epileptic. In March, 1888, he had pain in the right thigh with swelling of the gland. The swelling disappeared, but the pain persisted. He could not bear the right foot on the ground. Then the pain passed to the left leg, which became powerless and he could not bear that foot on the ground. The trouble persisted till July. All movements were possible and painless when lying down. He was sent to the hospital but got well on the journey. In October he began to have pain in the knees, back and hips, and the abasia returned. All movements were again possible and painless in bed. He could walk on his knees or on all fours, he could stand and mark time,

but on trying to walk he would hold himself up on his toes, making short steps, three or four inches long, jumping like a magpie. If suspended he could move the legs freely. No anæsthesia.

OBS. XXVII.—(Salemi Pace.³⁷ Woman, 27. Father rheumatic; mother convulsions in childhood. Rheumatic. In 1885 had rheumatism, paresis of the legs, inability to walk for seven months. Sudden cure. In 1888 after a walk she felt unusual weight in the legs, walked with fatigue, and the knees gave way. Went to bed and the next day felt well, but on trying to rise the legs flexed under her. In bed she could move her legs perfectly. Some lumbar pain. Hyperæsthetic spot in spine. Hyperæsthesia in left leg. Sensation normal. Knee-jerks normal. Left leg somewhat weaker. Sensation of cold in legs somewhat exaggerated; temperature in legs slightly reduced. Hyperæsthesia and weakness five days later transferred to right leg, then three days later transferred again to left, and other transfers followed. Recovery in a month.

OBS. XXVIII.—(Cahen, from *El Siglo Medico*.) Boy, 7. Slight febrile disturbance. A week later, after exposure to cold intense pain in back of neck. No signs of meningitis. He convalesced, but refused to get up, and it was found he could not stand. He moved the legs perfectly in bed, the sensation, reflexes and nutrition were normal. There were no pains. Six months later the condition was unchanged.

OBS. XXIX.—(Cahen, from Gillet.) Boy, 6. Father epileptic, father's aunt nervous. Slight rachitis, intellect slightly impaired. Slight febrile attack. Sudden fright after which he could not walk. He could stand without support, but it was hard to get his feet from the ground; he dragged them, spread them and oscillated from side to side. No contractures; muscular strength, coördination and sensibility normal. Pharyngeal reflex normal. Electrical sensibility diminished. Knee-jerk diminished on right. Treated by faradism. Ten days later the current caused great pain; the right knee-jerk became normal. He gained rapidly, but a month later after an attack of pulmonary congestion he relapsed.

OBS. XXX.—(Cohen, from Vallet.) Woman, 27. Neurotic. In 1883 miscarriage, which was followed by malaise and attacks of abasia, yawning and a feeling of exhaustion. Three weeks later unable to walk and did not recover power for three months. In November, 1884, relapse after sore throat. In June, 1885, relapse after migraine. In April and November, 1885, February, April, October, 1886,

repeated relapses, one being associated with pregnancy. In April, 1887, new attack, cured by Bernheim by hypnotic suggestion. In December another attack, cured less readily by suggestion. In June, 1888, another attack where suggestion acted less efficiently and some weakness persisted. In July another attack lasting eight days. In November, 1888, had new attack with malaise, fatigue, pain in the left side of head and left blepharospasm. Suggestion cured this and made her walk a little. The attacks come on suddenly or gradually and most commonly after an attack of migraine; the onset is attended with malaise, yawning, faintness, dimness of vision and giddiness and the attack ends with weeping. At times she has cramps in the abdomen. Hypnotism is now far less effective. She can stand for a few minutes, then she trembles. The tremble is worse when the eyes are shut and there is then incoördination. She cannot move one foot before the other or stand on one leg. She can walk on her knees, on all fours or hitch along sitting in a chair. She has trembling of the legs in bed and of the arms when grasping. Knee-jerks exaggerated, sensation normal. Ovarian tenderness, left. Twitchings on going to sleep. Blurred vision. Recovered in January, 1889. In February, a new attack with ptosis of left eye, recovered in spring. Light attack at end of year and in October, 1890.

OBS. XXXI.—(Cahen, from Vallet.) Woman, 48. Gout, migraine and deafness in mother's family. Attacks of torticollis, two fractures of fibula. In 1887 gave up active life, had vertigo, malaise and diarrhoea. About this time third fracture of fibula followed by lassitude and increased fatigue on walking. In May, 1888, after emotional excitement, transitory recurrent incoördination in walking, which in August became permanent abasia. She starts off well, then the feet are thrown out, come down hard like a tabetic; she cannot advance, the movements are exaggerated, the body is thrown backwards, but she never falls. She can jump and raise the legs in bed. No tremor, knee-jerks normal, œdema of legs, vague pain in calves, no anæsthesia. Hyperæsthetic joints, normal visual field. Red sweat in axillæ. Poor sleep. Bruised feeling (courobature).

OBS. XXXII.—Seglas and Sollier. Woman, 43. Insane after childbirth. Can neither stand nor walk, but throws the legs about as a tabetic. In bed movements normal. Muscular sense absent, tactile sense diminished. Delusions of persecution, hallucinations, confusion. Husband spiritualist, induced his delusions on her.

OBS. XXXIII.—(Möbius.²⁹) Young woman, could not walk or stand.

OBS. XXXIV.—(Möbius.²⁹) Girl, 10. After influenza could not stand. Brought in on her mother's back, clinging to her mother with her legs. In bed motion, sensation and reflexes normal. On feet legs gave way. Recovered in four weeks.

OBS. XXXV.—(Eulenburg.³⁰) Woman, 18. Neurotic heredity. Anæmic at thirteen. Mental overwork. Two years later exophthalmic goitre developed, with exophthalmos, goitre, palpitation, vaso-motor disturbances and amenorrhœa. Weakness, lack of energy, sleeplessness, depression. Great loss of flesh. Right ventricle dilated; chlorosis. Diminished resistance to galvanism. Some improvement under treatment. Later trouble in legs. Legs flexed under her when she tried to stand or walk and she felt pain in them. All movements could be performed in bed. Tibial nerves slightly sensitive. Sensation, motion, reflexes, normal. Before this attack she had had a sort of agoraphobia, fear of crossing bridges. Recovery after two painful treatments with the faradic brush.

OBS. XXXVI.—(Kusneszow.³¹) Woman, 26. Headache, irritability, anxious for years. Uncertain gait for eight years. For six years unable to walk or stand. Increased irritability. False hearing. All movements possible in bed, but she sunk at once to the floor on trying to walk. Knee-jerks and sensibility normal. Hysterical; headache, globus, neuralgias, hyperæsthesia. Gradual recovery in a year and a half. Attempt at suicide, after which there was again some trouble in walking.

OBS. XXXVII.—(Thyssen.³²) Girl, 11. For three years had epilepsy and difficulty in walking. A year later, after typhoid, walking became impossible. She walked with pronounced titubation, but without vertigo. She could hop or go on all fours perfectly. No motor trouble, no incoördination and no anæsthesia in the legs while sitting. After a fit limitation of the visual field and improvement in walking.

OBS. XXXVIII.—(Thyssen.³²) Girl, 12½. Neuropathic family. Vertigo, vomiting, headache, spinal hyperæsthesia in 1887. In 1888 disordered movements of legs. Convulsive crisis with cephalic aura and tendency to contracture. In October loss of consciousness as soon as her back is removed from the back of a chair or she is put on her legs. As soon as her back is supported she returns to consciousness. She can move her legs perfectly with the eyes open,

but not with them shut. She can swim and get about in a wheeled chair with the aid of her legs. Painful hysterogenous points. Gradual recovery by the aid of douches and isolation.

OBS. XXXIX.—(Thyssen.³²) Women, 19. Neuropathic family. Attacks of weakness. Legs weak for six months, and now she cannot stand alone. Choreic movements for a week. Flexion and extension of legs well resisted. Left side a little weaker. If leaning back in a chair cannot rise or sit up straight without using her arms. Cannot stand without support, oscillating from side to side and from front to back. She rises on her toes and makes various contradictory movements. Drags the right foot in walking.

OBS. XL.—(Thyssen,³² Brissaud.⁴) Man, 26. Four years at Tonquin. In October, 1889, had lumbar cramps. Pain in the lumbar region, paresis and dysæsthesia in legs, cramps in legs, exaggerated knee-jerks, epileptoid trepidation, incontinence. Walking became difficult and he jumped in trying to walk. In February, 1890, walking became impossible and he rebounded on his toes. Anæsthetic to the knees. In March he did not walk at all; in May he was much better. In January, 1890, he had spasmodic trembling in bed, produced by extension of the legs or even by uncovering them. Later all movements became possible in bed, but the tremor comes on when trying to walk. (Thyssen and Cahen consider this a case of abasia, but Brissaud thinks it is different from true abasia).

OBS. XLI.—(Henoch.³¹) Boy, 7. Masturbated for two years. Enuresis. Sleepless. For a fortnight unable to walk, cannot sit, stand or walk without support. Staggers, complains of vertigo and has marked ataxia. The symptoms increase on closing the eyes. In bed all movements are possible, but less strong. Sensibility intact, but plantar reflex diminished. Anæmic, emaciated. Hard to control evacuations. In a month cured by tepid baths with cold douches and prevention of masturbation. [Henoch speaks of having seen several cases of hysterical paralysis in children where they could not walk, but could move the limbs in bed, and quotes two cases where the legs were paretic, with inability to walk, but he does not state whether in these two cases, the legs could be moved when lying down].

OBS. XLII.—(Hammond.¹⁹) Woman. Old Pott's disease. Later she became neurasthenic and had aphonia. While in bed with neurasthenia she could move her legs perfectly. Now in walking she advances the left leg and

draws the right one after her. If she tries to advance the right leg or stand on it she revolves to the right and falls. If this be prevented she makes a profound salaam or flexes the thigh on the trunk. No paralysis. Knee-jerks normal. Slight loss of muscular sense in right leg. Sensibility otherwise normal; visual field normal. She has similar trouble if she tries to go on all fours. It requires a greater mental effort to move the right leg in bed.

OBS. XLIII.—(Hughes.²²) Woman, 32. Always delicate. Rheumatic, neurasthenic. Spinal and peripheral neuralgic pains. Cardialgia. Transient delusions. While in bed can move limbs perfectly, but she cannot stand without support, or put feet forward while standing. She can put feet forward while sitting. No anæsthesia. No signs of hysteria.

OBS. XLIV.—(Souza-Leite.²³) Negress, 38. Convulsions in childhood. Rheumatism. In June, 1887, saw a woman in convulsions which caused her to have malaise. In July she had abdominal pain in a car, and in getting out to walk her legs felt wooden and trembled. Paræsthesia in feet. Relief on sitting. That night she had hallucinations. Three days later sense of position diminished, ovarian tenderness, right plantar reflex increased. Dyschromatopsia. Sensibility slightly diminished in legs. On rising legs tremble as in spinal epilepsy, but less if the foot is flat on the floor. Knee-jerk increased, greater on left. In walking she puts a cane in front of her, rises and falls, flexing and extending legs at the knee and rising on heels in rhythmical oscillations. Well in a week.

OBS. XLV.—Souza-Leite.²³ Girl, 12. Neuropathic family. Poor sleeper. After a slight febrile attack (measles) she grew forgetful and committed unusual faults. The legs felt heavy and crawly. The arm twitched and she twisted herself about. She cannot walk alone and would fall without support. Back hyperæsthetic; left ovarian tenderness; diminished pharyngeal reflex; hallucinations of sight; convulsions. On trying to walk she flexes and extends the legs. Both these cases occurred in an epidemic of chorea.

OBS. XLVI.—(Ladame.²⁴) Man, 54. Much exposure, malaria and yellow fever. Twenty-five years ago after a venereal sore, sudden seizure, vertigo and distress, pallor, feeling of impending death. Some days later a similar attack in which he could not walk or cry out. Gradual recovery with much distress on first trying to walk, but he soon was able to keep on with a long march. Four years

later a new attack with pallor. Some days later attack with inability to walk and severe neuralgia in the heel. For years could walk only a short distance without an attack. In them he feels a shock. Feels perfectly well when sitting or lying down. Loses consciousness in them if on horseback. Pains in the head and back. His hand grows tired if he writes. Vision good. Sensibility normal. Knee-jerks normal. Romberg's symptom absent. No weakness or ataxia. No hyperæsthesia. Sudden attack after walking in which he turns pale, raises his arms and sits down. If he tries to walk further his feet tremble and cannot be detached from the floor.

OBS. XLVII.—(Binswanger.) Man, 55. Neurotic taint. Syphilis and overwork. In 1883 after a hearty meal had a feeling of weakness, vertigo and distress, and could not stand erect for a few minutes. Six months later he had an attack with vertigo and a feeling of inability to stand or walk, and increased sensitiveness to sounds. In 1885 he had other attacks with distress, tremor, tinnitus. The feet clung to the ground and he had much cardiac distress. A crowd or an extended space caused much distress. He was neurasthenic and syphilophobic. He has repeated attacks with frightful unrest and cardiac distress. Arteries rigid. Knee-jerks exaggerated. No ataxia, strength good. Sensation normal, visual field slightly contracted. If he is put in the middle of a room his head trembles, he looks restless and anxious, puts his hand to his occiput and rushes for a support. He has similar disturbance in sitting. Weight in head, numb feeling in feet. No vertigo. On walking slowly he has pressure in the occiput, cardiac distress and an idea he can go no further. He stands still or turns and hurries home with long quick strides, a stiff swaying gait, with his head sunk downwards.

OBS. XLVIII.—(Binswanger.) Man, 58. Brother nervous. Always nervous. Overwork. One morning, having been well the day before, he woke suddenly with intense anxiety and a feeling of heaviness in the head. He jumped out of bed and felt blinded; he staggered as if drunk, rushed to the window and had a feeling of complete loss of power and approaching death. He was perfectly conscious. The next day he was well, but afterwards he had spells of feeling uncertain in walking and standing. He staggered and heard people call him drunk. He thought of death and became irritable. He could not walk from fear. New impressions increased the trouble. He felt best on his back. Exertion, conversation, etc., were painful. Knee-jerks ex-

aggerated. Sensation, visual field, ocular movements normal. No ataxia or Romberg's symptom. Sleep poor; digestion slow. Partial recovery in six weeks.

OBS. XLIX.—(Binswanger.³) Man, 35. Mother neuropathic. Dreamy, effeminate. Overwork. Power for intellectual work grew weak and he became excitable and had a sense of weight in the head. During a short walk he fell, complained of headache, had a rapid pulse and dim vision, could not speak or get up. He had a feeling of annihilation and impending death. This lasted fifteen minutes. Afterwards he had headache and gloomy ideas. When he tries to walk he has a sudden trembling and a feeling of distress and he would fall without support. He has titubation and intellectual weakness. On his back he feels well and makes all movements without tremor or ataxia. On sitting or standing he has great distress. He walks more easily in the dark. He recovered after a year's treatment.

OBS. L.—(Seglas.⁴) Woman, 40. Overwork. Sudden attack two years before of pain and weakness in the leg with a feeling as of falling if she tried to walk. Later headache, loss of appetite, indigestion. Trouble in walking increased. Vertigo. Trouble in walking especially in the morning and when fasting. Sense of weakness in the legs with oscillation, a feeling as if the ground were rising; objects swam before the eyes and the head felt light. Later on intellectual disturbance, slowness of association, poor memory, failure of attention, irritability. At present she cannot stand or walk and if she is raised she has extreme anguish and epigastric oppression, pallor, sweats, palpitation and a sensation of impending death. This ceases when she is put back in bed. She has this anxiety in sitting if the back be not supported, but she can ride in a carriage easily. Sensibility and muscular sense normal. Reflexes slightly exaggerated. Internal organs normal. Special senses normal. No paralysis or incoördination.

Astasia-abasia has been observed at all ages from six to seventy-five; nineteen cases were under twenty, twenty-five over; twenty-five cases were in men, twenty-five in women. In eighteen cases there was a distinct neuropathic heredity, in nine cases no heredity taint could be elicited. In twenty-one cases it was associated with hysteria, in three with chorea, in two with epilepsy, in four with intention psychoses and in one each with dementia, confusional insan-

ity and exophthalmic goitre. Many of the cases were also neurasthenic.

It must, as I have said, be regarded not as a disease, but as a symptom. As a symptom what are its relations, and what is its pathogenesis?

Binswanger regards it, apparently, as allied to the intention psychoses, agoraphobia, claustrophobia, etc. His own cases, three in number, are certainly not typical cases of astasia-abasia as described by Blocq and others. In his cases there has been the intense anxiety, cardiac distress and inability to stand or walk consequent upon that distress. The patient is profoundly conscious of his trouble and his impotence is due to fear and secondary to it. Ladame's and Seglas's cases resemble those of Binswanger. Eulenburg's case shows a certain transition, in that the patient had previously had agoraphobia, although the abasic trouble was not attended with any anxiety. In forty-five cases there was no anxiety or distress and the patient was not dominated by any morbid terror. It is therefore manifestly incorrect to base a hypothesis upon a symptom exhibited only by a small percentage of the cases, and it is by no means clear whether we are justified in classifying Binswanger's, Ladame's and Seglas's cases as genuine astasia-abasia.

Various French writers, noting its frequent occurrence in hysterical subjects, are disposed to regard it as *prima facie* a symptom of hysteria. This seems to me unwarranted. In twenty-one cases the patients had also well-marked hysteria, but in seventeen others evidence of hysteria was absent, and it would be an utter begging of the question to say that those cases were hysterical because they had astasia-abasia.

Walking and standing erect are acquired faculties, acquired slowly after long practice. The first attempts are made as distinct conscious voluntary processes, every movement being a separate act of volition, begun by a discharge from the highest cortical cells in the motor tract. Gradually the element of conscious volition grows weaker, the movements become almost automatic, and the individ-

ual can talk, read or turn his attention to diverse objects while standing or walking. He may even perform these acts with complete unconsciousness during sleep. It is assumed that these functions have, in the process of education, been assigned to groups of cells in a lower level, below the level of consciousness. The process of walking, moreover, is differentiated from other movements of the legs in somewhat the same fashion that, in highly educated persons, writing is differentiated from other movements of the hand, or, in the sensory sphere, the understanding of speech is differentiated from the understanding or perception of sounds.

In the pure cases of *astasia-abasia*, and in my own case, the motor apparatus is, at least to a degree, in working order. A definite motor impulse set free as an act of conscious volition in the highest cortical cells can be and is conducted perfectly well to the muscles. The movement is made with strength and accuracy. Hammond suggests that there is in these cases a loss of power in adjusting muscular contractions, and other writers have attributed *abasia* to a disturbance of muscular sense. This is hardly tenable. In the majority of cases the muscular sense, as tested, has been unaffected, and highly volitional movements are perfectly well performed. My patient, in the height of his spasm, could make the balance step with comparative ease. It is only, or chiefly, when the action of the highest centres is taken off, and the subconscious centres are called into play that *abasia* becomes manifest. Charcot regards these centres as spinal and hints that *abasia* may accompany organic spinal disease, but no case as yet has been found to substantiate this hypothesis. Salemi-Pace and Hughes go still further and attributed the trouble to a failure of memory in the spinal cells, a partial spinal amnesia.

Although birds and frogs can stand and walk when their heads are cut off, that is, under the influence of the spinal cord alone, I doubt whether the spinal mechanism in man is sufficient to regulate completely the movements of locomotion. If so, why might we not expect something

more than the simplest reflex movements in cases of transverse lesions high up in the cord? I confess a difficulty in imagining in the comparatively simple nervous mechanism of the cord a morbid process which can affect certain forms of movement and leave the rest free. It seems more plausible that the mechanism affected is higher up.

We can more easily imagine in the brain, below the highest layer of motor cells, cells that act only by conscious volition, a subordinate group of cells in the layer of the subconscious—a part of James's hidden self, perhaps, to be revealed in rare instances, as Janet has done, by the hypnotic trance—which has been educated to preside over the movements of walking. The cells of this group are knit together by many processes of association, and, as a rule, act harmoniously in producing regular coördinated semi-conscious movements.

Now let some process break up the associations between the cells in this subconscious group and the result is obvious. Their harmonious interaction and the production of subconscious movements is lost, but the motor tract is still open for the conduction of voluntary conscious impulses. We have then for example a retention of voluntary movements in the legs,* but a loss of the semi-automatic power of walking.

Such a morbid process would probably be what is termed "dynamic." A gross lesion, such as hæmorrhage, thrombosis or neoplasm, would, in all probability, do more than break up associations. Association tracts, cells and the motor tract itself would probably be destroyed together.

Some support to this hypothesis has been brought out through hypnotism, which puts in evidence many of these subconscious processes and which probably affects the cerebrum rather than the cord. Blocq hypnotized a patient and told her that she no longer *knew how* to walk,

* I say of the legs, but it seems a little doubtful whether in some cases the trouble should not be referred to the trunk muscles, producing inability to maintain the erect posture, and, *ipso facto*, inability to walk. In my own case I was unable to find any disturbance of the trunk muscles, but their condition should be studied with care in subsequent cases.

and ataxic abasia was at once produced. When he said that she *could* not walk, the idea of complete impotence became paramount and paralytic abasia was produced. In astasia-abasia the onset is usually sudden and the trouble has often developed after some emotional disturbance, fright or trauma, or after an illness which has kept the patient in bed. In this way, perhaps, in the field of the unconscious, ideas of inability to walk have developed, which, by a process of suggestion, have acted on the lower cerebral centres for automatic walking and have inhibited them, or broken up the normal association process. Thus astasia-abasia comes under the heading of the association neuroses, to which Prince has lately called attention.

This process is entirely distinct from that of agoraphobia. Here some external factor presents itself to consciousness, the attention to such a phenomenon is morbidly increased and the idea thus aroused dominates the field of consciousness and inhibits voluntary effort. The associations in the subconscious centres are not affected, the action of the highest motor centres is inhibited; the patient has not forgotten how to walk, but an external factor has excited his morbid terrors so that he is afraid to walk. In true insanity of doubt—which differs distinctly from agoraphobia and the allied intention psychoses, the imperative representation is ever-present in consciousness and dominates the entire life. It is independent of the patient's surroundings. The victim of agoraphobia suffers only when in an open space, the victim of the insanity of doubt suffers everywhere and all the time.

As the association neuroses are seen most commonly in neurotic subjects, especially in the hysterical, it is not remarkable that in the majority of cases we find astasia-abasia associated with hysteria or some pronounced neuropathic taint. That does not mean, however, that it is necessarily a symptom of hysteria.

Some psychical shock, as I have said is frequently the exciting cause, affording the occasion for the unconscious auto-suggestion. In my own case, however, I am disposed to attribute the suggestion to more distinctly physical

causes. It seems not improbable that the beginning disability of the legs, due to the organic disease, acted as the suggestion and superinduced upon the organic disability the functional disability of abasia.

I have spoken of the ætiology and psycho-pathology of the trouble, and I would add a few words as to the symptomatology. The manifestations of the disturbances of standing and walking vary materially both in kind and degree, as the cases collected will show. Blocq was the first to attempt to classify these variations, basing his classification on the degree of disturbance, as follows:

Gait	{	Abolished.
		Diminished.
		Disturbed.

Grasset adopted a classification based on the kind of disturbance:

Gait	{	Weakness.
		Incoördination.
		Cadenced Movements.

Charcot suggested one more satisfactory:

Astasia- Abasia.	{	Paralytic.	{	Choreiform.
		Ataxic.		Trepidant.

Thyssen and Cahen, finally, have suggested the most elaborate classification of all:

Astasia- Abasia.	{	Paroxysmal	{	(Par accès)	{	(Ladame .
				Paralytic.		
		Continuous.		Ataxic.		Choreiform.
						Trepidant (Charcot, Grasset . Saltatory (Brissaud).

This is hardly satisfactory, for it includes too much, and yet does not include enough.

In the first place we must distinguish the cases where abasia is not an association-neurosis, but an intention-psycho-sis (Binswanger, Ladame . I have already spoken of them and touched upon their pathology. They differ dis-

tinctly from the other cases, and if included at all under the heading of *astasia-abasia*—which I am not disposed to do—they must be set in a class apart.

This throws out almost the only case of the paroxysmal, intermittent type (*abasia par accès*, Obs. XLVI.). If this type exists, as my case would indicate, it probably will be found to present the same features as the continuous forms. The *cases*, therefore, may be divided in two ways:

Astasia-abasia { Paroxysmal.
 { Continuous.

Astasia-abasia { With distress (intention-psychosis).
 { Without distress (association-neurosis).

Either one of these classifications may probably be applied to the other, and the third classification, that of *forms* of *astasia-abasia*, may be applied to both.

The commonest form of *astasia-abasia*, present in twenty-six cases, is the paralytic. Here the legs simply give out as the patient attempts to walk, and bend under him as if made of cotton. There is no rigidity, no spasm, no incoördination. In bed, sitting, or even while suspended, the muscular strength is found to be good.

In other cases the motor disturbance is manifested by some form of spasm or ataxia. This was present in some form in twenty-four cases. The commonest variety seen twelve cases is the trepidant, where walking is hindered by contradictory movements which stiffen the legs and consist of a sort of trepidation recalling that of spastic paraplegia.

In ten cases there were sudden flexions of the legs, such as is seen after a sharp blow on the ham-string muscles; the body is nearly thrown down, and the exaggerated and sudden flexions are seen also in the arms. These movements recall those of chorea, and hence Charcot has given to this variety the title of choreiform. In some cases, as in Souza-Leite's, the trouble seems to be associated with a form of epidemic chorea, and Rodrigues describes a choreiform *abasia*, more closely allied to epidemic rhythmical chorea than to true *astasia-abasia*, for the ataxic and choreiform movements are present in repose, as not in-

frequent especially in the spring in Bahia and other parts of Northern Brazil.

Whether we must admit into this classification Thyssen's saltatory variety is still doubtful. It rests only on the cases of Erlenmeyer and Brissaud, (Obs. IX, XL.). Of the latter I have already spoken, as more probably saltatory reflex spasm than astasia-abasia. The same may also be said of the former, but in this case the spasm could not be produced by pressure on the soles and it did not come on until after the feet had been on the floor for some seconds; hence its position is doubtful.

The prognosis of astasia-abasia, taken by itself, is usually good. Children almost invariably recover completely. In adults, however, relapses are commoner, and in a few cases, especially in those of advanced years, it seems to be permanent. It never, however, threatens life.

The treatment employed has been various. The best results seem to have been obtained by adopting the usual treatment for hysteria, isolation, feeding, rest and moral control. Hydrotherapy has proved of distinct advantage, and electricity, usually as the static spark or as the induced current, seems to aid the cure. The essential factors seem to be to treat the underlying neuropathic condition in the most approved way and then to break up the morbid association by moral appeals. These must, of course, vary with the individual. In my own case it seemed to me that the substitution of a distinctly volitional for an automatic act in the midst of the paroxysm might so far break the morbid association as to render the normal automatic act again possible. Hence I suggested the balance step. Its success at first was striking and it still proves of some help, but the progress of the underlying disease naturally renders the hope of any lasting relief vain.

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CURRENTS OF HIGH INTENSITY IN CANCER OF THE UTERUS.

Dr. Wernitz, of Odessa, relates four cases of cancer of the uterus treated by means of galvanism, with favorable results.

The results obtained were only palliative, but very satisfactory. Currents of from 100 to 200 milliampères were employed, according to the tolerance of the patient. The large indifferent electrode was placed upon the abdomen, while the active electrode, in the form of a ball, was placed directly in contact with the tumor. Treatment of eight or ten minutes were given every day or every two days.

He also uses a platinum needle, which he introduces into the neoplasm and connects with the negative pole of the battery. As to results, the secretions and the tendency to hemorrhage have diminished.

The pains have been so far relieved, that patients who could never get along without opiates have been able to discard them entirely.

The results are such as to stimulate the employment of this agent in uterine cancer.

W. F. R.

POLIO-MYELITIS ACUTA ADULTORUM.¹

BY WILLIAM C. KRAUSS, M.D., BUFFALO, N. Y.

MY object in bringing this subject before the association is, first, to report a case which has recently come under my observation, and secondly, to gather some information which may assist me in a better comprehension and treatment of the case.

Acute polio-myelitis occurring in the adult is a rare disease as compared with the infantile form, and the literature of the present day contains little reference to it. Its marked similarity with other affections of the nervous system, particularly with multiple neuritis, has long ago been commented on, and I am not over-confident that my own diagnosis is even correct or unassailable.

J. G. F., age, 43, married; height, 5 feet 10 inches; weight, 190 pounds; complexion, dark; hair, black; constitution, before stricken, strong, healthy, vigorous; countenance, open, frank, intelligent.

Antecedents: paternal side; nothing indicating nervous or mental disease could be elicited. Both grandparents passed through severe attacks of the measles between the thirty-fifth and fortieth years. The father likewise had a severe attack when thirty-four years of age, and as a sequel was left partially deaf. Maternal side: The grandfather, one uncle and an aunt were subject to despondent and melancholic spells. The aunt, on one occasion, took a large dose of morphia with suicidal intent. One sister and one daughter are alive and healthy.

Early history.—As a boy he was as rugged and healthy as any. When nine years old he had the whooping cough. Otherwise, nothing of any importance occurred until his thirty-eighth year when he, too, had a severe attack of the measles. He was bedridden over six weeks and not able to resume his duties for more than three months. From this time on his constitution seemed to be shattered, he

¹ Read before the American Neurological Association at Washington, September 22 to 25, 1891.

lacked energy and ambition and his work seemed to be mere drudgery. On September 20, 1888, then forty years of age, he was taken with symptoms which his physician regarded as of malarial origin. The fever seemed to increase in intensity, when on the third day (September 23, 1888), he suffered excruciating pain in the nape of the neck, extending downwards along the spine and radiating into the extremities. Consciousness was undisturbed, no stiffness of the neck, no pain along the course of the nerves—in short, no symptom of meningeal or neuritic trouble could be ascertained. Thirty-six hours after the advent of the pain the fever subsided, and on awakening in the morning the patient found himself unable to execute the slightest movement of the body or limbs. The head and neck only were capable of voluntary motion. Sensory disturbances such as pain or anaesthesia were absent, but he complained of a deep-seated, sore, heavy feeling in his muscles and joints. His extremities were cold, cyanotic, his bowels constipated and his appetite impaired. The head and functions were perfectly intact, nothing abnormal that could be discerned by him or his friends. After three or four weeks he was able to move slightly the index finger of the left hand and the great toe of the right foot. The period of regeneration was extremely slow and tedious, and at the end of six months he regained a limited power over the left wrist and right ankle joints. He was unable to sit up erect, and was as powerless as a block of wood.

I first saw the patient in June, 1889, nine months after the initial stage. I found him, to all appearances, a strong healthy, middle-aged man, lying in a semi-recumbent position, and then and there made the following examination:

Psyche.—His mind is strong and active; sleep is good; although patient and resigned, he is moved to tears when spoken to about his affliction.

Motility.—The muscles of the face and neck are normal in their actions. The orbits and pupils are likewise normal in their movements, and the tongue offers no deviation on being protruded. With some exertion a slight upward movement of the left shoulder is possible, due to the action of the trapezius and levator anguli scapuli. The arm and forearm remain powerless, but there is a restricted motion of the left wrist joint and index finger. The right shoulder, arm, forearm and hand are incapable of executing the least

movement. The left thigh, leg and foot are equally powerless, but on the right side the patient is able to flex the foot on the leg. The muscles of the back at first were completely paralyzed, but at the present time he seems to have gained some power over them. The action of the sphincters, as well as the diaphragm, remain undisturbed.

It was impossible to make a complete electrical examination because of the inability to transfer the patient, and it was just as impossible to transport a suitable apparatus to the house. Small portable batteries, both Galvanic and Faradic, did not cause contraction of any of the muscles of the body or extremities.

Sensibility.—A careful examination revealed no painful spots along the nerves, no anæsthesia, and no loss of temperature sense.

The organs of special sense were all unimpaired.

Trophic and vaso-motor disturbances.—There exists marked atrophy of the supra- and infra-spinati, deltoid, biceps, triceps and muscles of the forearm and hand of both sides. The muscles of the back and lower extremities do not partake of any wasting. Measurements made November 24th, 1889, show the size of the right and left arms respectively:

Right forearm circumference.	Distance from the internal condyle.	Left forearm circumference.
6 $\frac{3}{8}$ in.	9 $\frac{1}{2}$ in.	6 $\frac{3}{4}$ in.
7 $\frac{1}{4}$ "	6 "	7 $\frac{1}{2}$ "
8 $\frac{1}{2}$ "	3 $\frac{1}{4}$ "	9 "
9 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	9 $\frac{3}{8}$ "
Arm, 9 $\frac{3}{8}$ "	3 $\frac{1}{4}$ "	Arm, 9 $\frac{3}{8}$ "
9 $\frac{7}{8}$ "	6 "	10 $\frac{1}{2}$ "
Hand and thumb,	From tip of index finger,	Hand and thumb,
8 $\frac{1}{2}$ in.	5 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ in.

Measurements made a few weeks ago show little if any change.

There exist no trophic changes in the skin or nails; the joints are somewhat stiffened, but not contracted.

² The thermæsthesiometer employed by the author is a model of cheapness, durability and precision, and consists of the expired air of the examiner. Blowing with some force upon the denuded surface produces a sensation of coldness, while if he breathe softly the patient will experience a sensation of warmth. Although subject to variations, yet the difference is great enough to be appreciated by one offering no sensory disturbances, and can be relied upon with as much accuracy as by the employment of hot and cold water tubes. The writer has made many trials with this procedure, and in none has the result been contrary to the condition present.

Vaso-motor disturbances are present in the atrophied members, also in the lower extremities, which become cold, cyanosed and œdematous.

The tendon reflexes are absent; likewise the superficial. The genital is naturally greatly weakened.

The bowels are regular, no trouble in urinating, pulse is somewhat feeble, temperature normal. The urine contains neither sugar nor albumen.

The treatment pursued is nerve tonics, massage, electricity and sponge baths.

But little improvement has taken place since I first saw him. The muscles of the back seem to be somewhat stronger, but with this exception he is in the same helpless condition as when I first saw him.

To me the case is of great importance and I hope I have not wearied the Association with its details. The fact that the first cases of the kind ever reported followed attacks of measles in middle life lent additional interest. The paternal side offers four members, three besides the patient, who in middle life were taken with the measles. On the maternal side we find psychopathic tendencies of a melancholic and suicidal nature. That the measles, *per se*, are capable of precipitating a serious spinal lesion I do not admit, but when neuropathic or psychopathic tendencies are inherited, all infectious diseases engender, to a greater or lesser degree, organic nervous affections. These need not necessarily follow at once, but weeks, months or even years may elapse before bursting into action.

That so little, if indeed any, improvement should have taken place after the subsidence of the general symptoms is worthy of note. Generally a partial recovery may be expected and a gradual improvement for the first nine or twelve months may be looked for. In this case, no appreciable change occurred in the motility of his extremities and but a slight improvement in the muscles of the back.

A complete paralysis of the lower extremities, due to a spinal lesion, would be accompanied with more or less wasting of the muscles and abolition of the reflexes. The superficial and deep reflexes are abolished in the case re-

ferred to, but no wasting, or atrophy, or other trophic disturbance is appreciable.

The points of difference between the symptoms offered by my patient and those of acute anterior polio-myelitis caused me to hesitate some little time before coming to a conclusion, and even now my diagnosis needs confirmation by a necropsy, which I hope may soon be forthcoming.

ON THE DIAGNOSIS OF MULTIPLE DEGENERATIVE NEURITIS.

Dr. H. Lorenz (*Zeitschr. f. klin. Medicin*, No. 5-6, 1891), before giving the details of a clinical case studied by him, passes in rapid review the cases described during the last ten years and emphasizes that writers are not agreed as to the neuro-muscular seat of the disease and have different opinions on its etiology, granting, at the same time, that the most various principles may be the cause of multiple neuritis. In his case the disease followed rapidly an exposure to cold, the patient dying in three months and a half. The microscope revealed great degeneration of the peripheral nerves, with integrity of the nervous centres, atrophy of the muscular fibrillæ, necrotic ulcerations of the intestines, thinness of the tunica intima of the aorta, radial, femoral and basilar arteries of the brain. In the small peripheral arteries, below five mm. in diameter, proliferation of the intima, infiltrations of the cells of the walls and complete obliteration of the small vessels were discovered. In this case the relation of the degeneration of the nerves and the vascular alterations is interesting. Hence, the writer regards the affection as having its primary seat in the blood-vessels and that the nervous disease does not depend upon changes in the nervous system, but that some toxic or infectious agent acts directly upon the blood-vessels, producing a diapedesis of leucocytes, if of slight degree; if of a greater, an inflammatory process of the vessel-walls. Hence, in multiple neuritis one has to do with a disease which may simultaneously attack the muscles, vessels and nerves. In his case, as well as in that of Kussmaul and Maier, and the two observations of Minkowski, there was no sign of syphilis. All five of these cases were those of alcoholists. Alcohol is itself not the cause, but only predisposes. The acuteness of the phenomena speak in favor of an infectious virus.

F. H. P.

REMOVAL OF A NEUROMA; FOLLOWED BY DIS- APPEARANCE OF ANÆSTHESIA OF FOUR- TEEN YEARS' STANDING.¹

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THE case I have to report is not only interesting on account of the late appearance of acute symptoms resulting primarily from an injury to a peripheral nerve, but also as illustrating the important practical fact that no limit can be set to the time during which complete anæsthesia may exist after such an injury and yet be relieved by operation. Tillaux has already reported a case of similar duration, and Bowlby has reported a case in which anæsthesia following section of a nerve lasted twelve years, but improved to a certain point eight months after the secondary suture, and at the time the case was reported it was still improving. This author states that improvement in the motor sphere, even, may be hoped for at least two and one-half years after injury, perhaps considerably longer.²

CASE (referred to me by Dr. Chadburne).—C. B., aged twenty-nine, single, an American, is a professor of astronomy in Beloit University, Wisconsin, and director of the observatory. He consulted me a little over a year ago on account of a numbness and tingling which had appeared four months earlier in the fingers of the left hand, and spread gradually to the shoulder, receding under electrical treatment to the wrist, where it had remained stationary for a month. There was also a dull pain extending up from the fingers. He had suffered from insomnia during the past year, and was worn out from having worked hard for five years without intermission. The family history was neu-

¹Read at the meeting of the American Neurological Society, September 22d, 23d and 24th, 1891.

²Bowlby, "Injuries and Diseases of the Nerves," p. 204. London, 1889.

rotic on the mother's side. There had been a similar attack of numbness in the feet five months earlier, which had disappeared in the last three weeks, but which had been complete while present, so that, for example, he could not tell the temperature of objects touching the feet. He had also, when I saw him first, an area of anaesthesia on the front of the right thigh the size of a small platter, and one on the right side of the chest somewhat larger. A loss of sensation, for which he expected no relief, had existed in the index finger of the left hand for fourteen years, since an injury to the nerve from a chisel cut.

Physical examination revealed a loss of sensation over the palmar surface of the left hand sufficient to prevent his recognizing the shape of objects held in the hand, though tactile sense was not completely lost, excepting on the index finger, where the anaesthesia was complete below the cicatrix. The anaesthesia extended to the wrist. The hand was sensitive to pressure everywhere except on the index finger, and moderate sensitiveness existed on the nerve trunks in the arm. There was no paralysis of any muscle, but the power of the hand as a whole was somewhat diminished. There was no atrophy or coldness, but some diminution in size and redness. The nails were normal. The cicatrix, about three-quarters of an inch in length, extended diagonally across the palmar side of the index finger, was linear, non-adherent, with no loss of substance, and was very sensitive to deep, and somewhat so to superficial pressure. The patient's general condition was fair only, the appearance being that of a somewhat neurasthenic person. There were no further local symptoms than those mentioned, no further disturbance of motion, sensation, nutrition, reflex or special sense. The urine was concentrated.

The patient was put on tonic treatment, including sulphate of strychnia—one thirtieth of a grain—and lithia water; out-of-door exercise, and generous, but digestible, diet advised. A mild galvanic current was also used. The patient was told that if improvement did not set in shortly, an operation would have to be considered. Improvement in general condition was apparent within two weeks, but the local symptoms remained unchanged. Dr. M. H. Richardson was therefore called in consultation and an operation was decided upon.

OPERATION.—An incision was made over the digital branch of the median nerve supplying the radial side of the

left index finger. An incision an inch in length was made, and a small neuroma found in the course of the nerve at this point, which, with one-half an inch of the nerve, was excised. Interrupted silk sutures—iodoform dressing—healing by first intention.

The neuroma was apparently one of the ordinary fibrous form, oval in shape, but was not examined under the microscope, as the patient wished to preserve it.

Recovery from the operation was speedy, the healing being by first intention.

Soon after this the patient went to Europe, returning three months later, reporting that the tenderness and pain had gradually lessened since the operation, and had entirely disappeared about ten days previously. Sensation was so far improved that objects in the hand were plainly distinguished, excepting by the index finger and thumb. The numb spot in the thigh had disappeared about five weeks after the operation, as well as that over the chest. The prickling and tingling about the thumb had also disappeared at about the same period.

There remained at this time a slight tactile anæsthesia on the ball of the thumb extending just beyond the first joint. He can distinguish the head from the point of a pin over this area, however, which he could not do before the operation. The area of complete anæsthesia on the index finger remained unchanged.

The exquisite sensitiveness to touch over the scar is replaced by a sensation "as if the numb half of the finger were laid upon the other half, and that half had a layer of nerves over it." The anæsthetic area is sensitive to cold, as it was not before. These symptoms led me to suspect that sensation was returning to the region supplied by the nerve from which the neuroma had been removed. A mild Faradic current was now applied daily and moderate massage practiced. Two weeks later the line of demarcation had shifted, considerably lessening the anæsthetic area, the line of paræsthesia following. Sensation in the thumb was now practically normal. In three days more the anæsthetic area was limited to a narrow tongue running from the scar to the end of the finger. This tongue soon shortened at both ends and within a week had almost disappeared, leaving only a slight superficial paræsthesia at one spot.

Four months after the operation, therefore, sensation had practically returned to the region which had been for fourteen years absolutely anæsthetic. The general condition was also markedly improved.

At this time the patient returned to Wisconsin. In a letter written five months later—that is, nine months after the operation—he writes: “You will be glad to know that your quondam patient is progressing finely; sleep well, eat well and my nervous system is as well as it was three years ago. I find I cannot endure quite as much physically as I could then, and I tire at things which did not then tire me; but, all in all, it has been a steady gain since I came back, and I think it is surely permanent.

“It takes that finger a long time to quiet down; it is very sensitive yet, especially to heat and cold, and once in a while this last Spring, when the arm would get chilled a little, there would be a little return of the old pain in the arm; only temporary, however, and there has been no return of the anæsthesia.

“My friends all say that I am not the same man who went away from here last summer.”

Last August, about a year after the operation, the patient came to my office looking stout and well. He stated that improvement had been continuous since his letter. He can now play the piano, which he could not do before the operation, and can row ten miles, using both hands with equal ease. He has no trouble in using fine adjustment, which he could not do before with that finger. The color of the skin over the index finger is normal, and it is now nearly as large as the other.

It is an open question how far the general improvement would have progressed under the rest and tonic treatment without operation, but it is apparent that this procedure not only relieved the reflex symptoms, but restored the function of the nerve after a period of fourteen years, a point of great importance in deciding the question of peripheral operation, inasmuch as it shows that, as regards anæsthesia, time alone as a factor in forming our opinion may be practically disregarded, where no other signs point to the hopelessness of operation.

THE ARRANGEMENT OF THE SUPRA-CEREBRAL VEINS IN MAN, AS BEARING ON HILL'S THEORY OF A DEVELOPMENTAL ROTATION OF THE BRAIN.¹

BY WILLIAM BROWNING, M.D., BROOKLYN, N. Y.

ALTHOUGH this theory of Hill was first published in 1885, the short sketch appended to his translation of Obersteiner (1890) will doubtless serve to gain for it much more general attention. As it has not, however, been worked out much beyond the stage of an attractive suggestion it may be in order to point out any other facts bearing thereon. In the first place his view is hardly described in sufficient detail to make it in all respects clear, and at best should not be taken too literally as regards minor points. He compares the form of the perfected mammalian brain, meaning, of course, each hemiserebrum, to that of a ram's horn or of a loop or kink. It might quite as well be likened to one turn of a spiral. To comprehend this more clearly, as applied to the brain, we should remember that a structure may simply enlarge without otherwise changing its internal or external relations, or it may, without change in volume, undergo any variation in shape; or finally, as is the view in the present case, it may both enlarge in volume and double or become twisted on itself. That the human cerebrum, as compared with that of lower orders, has expanded in certain parts and directions is, of course, an old observation. But, besides this, the claim is now made that the primarily straight brain has in its growth become reflected and curved on itself in such a way that it may be likened in general outline to a ram's horn, the apex of the temporal lobe representing the tip of the horn.

¹ Read before the Association of American Anatomists at the Washington Congress, September 24th, 1891.

For the present purpose it is not necessary to enter into the particulars of the theory or the arguments advanced, further than to say that he makes no use of local circulatory peculiarities in support of his position.

For instance, the distribution of the precerebral artery is very suggestive of a reflected field. This is noticeable in a general way in Duret's plates (*Arch. de Physiolog.*, Paris, 1874), but is more strikingly apparent in my recent ones (*Wood's Reference Handbook*, Vol. viii., N. Y., 1889). As these last were simply drawn to fact without thought of theory, they offer the better evidence. It is also noticeable in dissecting out these precerebral branches, that they run in juxtaposition to the parent stem for a surprising distance before glancing off to their respective fields.

But it is imaginable that the arteries, since they are more under the influence of an internal directing pressure, would more rapidly conform and adapt themselves to any new position, than would the veins with their interior pressure almost *nil*. Hence, from the veins, if from either, might we most naturally expect evidence relating to this point; and of the veins, those that from this theory would be subjected to the greatest displacement, viz., the supracerebrals. These lie along part of the greater curvature of this supposed spiral.

Except very casually Hill does not consider whether, in this transformation, any rôle is played by the enveloping membranes. However, the pia, being so abundantly connected to the brain by innumerable arterioles and veinules and also so involved by folds in the fissures, must naturally be carried along to the same extent as the apposed cerebral tissue. The more external membranes, on the contrary, are but slightly connected with the brain, and as in any such twisting of the brain its envelopes must naturally, for their own part, perform a purely passive rôle, it follows that the dura and skull are not carried along *in toto*, but simply conform by expansion or contraction to the growth-demands of the subjacent brain proper. Hence at the only points, exclusive of the base, where there are any connections between dura and pia some results of the tension produced by the

dragging of the one on the other would be probable. The main connections of this kind are again the supracerebral veins.

On this point part of the evidence to be quoted was published a full year before the first appearance of Hill's proposition, and hence may safely be considered free from any bias of previous knowledge. (Browning, *Veins of the Brain*, Brooklyn, 1884, p. 14-15): "It was long since observed that the more anterior supracerebrals take a course very nearly at right angles to the sinus, and that the posterior ones take more and more an oblique course, to such an extent that the most posterior ones must run forward a distance of 3 to 4 ctm. Here they terminate in the sinus with a very acute angle, against the blood current. The vein coming from the convexity makes at the edge of the longitudinal fissure, or somewhat further out and back in the pia, the necessary angle in order to approach the sinus as described. It then runs a short distance forward before leaving the pia. . . . The anterior supracerebrals,² more often than the posterior ones, spring over from the pia to the dura at some distance 1 to 3 or 4 ctm. laterally from the sinus.²

The posterior ones reach the side of the sinus, and the most posterior ones even curve forward before leaving the pia, but the distance from this point to that where they empty into the sinus is at least equal to that in the varying anterior ones." Page 15: "The anterior (supracerebral) veins empty above or at the side of the sinus, comparatively unhindered, as though they came straight from the dura. The veins further back, however, discharge more and more at the side and bottom of the sinus, and those farthest back empty almost without exception at the bottom. Many of the latter, indeed, must take an upward course through the falx cerebri and traverse a considerable distance before they reach the lowest part of the sinus." On this last matter Trolard had previously made a similar observation. The

² This further progressive distinction between the anterior and the posterior supracerebrals has since been again and more fully studied by Mittenzweig, (1889).

above quotations sufficiently indicate the facts which, it is believed, have some relation to the rotation theory.

Page 34:—"Development. If one bears in mind that the brain in its growth doubles, so to speak, over backward and elongates somewhat, it is easy to see that from this . . . the brain would carry the pia with its veins backwards, the posterior ones a considerable distance, the anterior ones little or none at all. (Foot note.) This can be prettily illustrated with a column of soft potter's clay. A stout cord runs straight along one side from end to end, representing the sinus longitudinalis; small cross-strings firmly fastened to the large one at equal distances, a little pressed into the clay, but with their ends free, represent the supracerebrals. If now we fix one end of the column and cord, and then bend the other end of the column in a direction away from the cord, the latter will be seen to no longer reach the whole length of the now convex side; while of the cross-strings, the first are about as before, rectangular to the sinus; those farther back have been so pulled forward and down that they can be followed some distance beside the main cord before they pass out around the column. This corresponds closely to what seems to have occurred in man."

Page 35:—"The appearance on one small fœtal brain seemed to substantiate this, *i. e.*, the posterior veins did not stand so oblique to the sinus as in the brains of adults." This is very conclusively shown by the illustrations in the more recent work of E. Hédou (*Étude Anatomique sur la Circulation Veineuse de l'Encephale*, Paris, 1888). Plate V., fig. 1, from a human fœtus of $3\frac{1}{2}$ months, shows no indication of this angular attitude of the posterior supracerebral veins. Plate V., fig. 2, from a fœtus of $6\frac{1}{2}$ or 7 months, gives some evidence of this arrangement, whilst in Plate VI., fig. E., the usual position of these veins in the human adult is outlined and can be compared with the immature forms.

If it were possible to determine the proper size of column, calculations or experiments might be made with it and the results compared with measurements from a number of adult human beings *in situ*, with a view to determine

mathematically how far the argument from the veins bears out the theory.

Further, it is probable that the closing up after foetal, or at latest during infantile life, of the prolongation of the longitudinal sinus through the foramen cæcum, may be explained by the same retracting action of the supracerebrals at their junction with the said sinus, especially as the maximum tension, so far as the sinus line is concerned, would be exerted at this point.

Although the evidence from the vascular arrangements as here cited only applies to a portion of the cerebrum, it at least so far corroborates the rotatory or spiral theory, or at least adds interest to it as a working theory. Moreover, this is evidence that can readily be followed by a comparison of human brains at different stages of growth.

CEREBRAL HÆMORRHAGE.

Dr. Mendel (*Medical Age*, July 25, 1891), after some researches to determine why cerebral hæmorrhage generally takes place in the substance of the corpus striatum and optic thalamus, advances the following: The arteries distributed to the medullary substance and central ganglia are terminal and do not anastomose with the neighboring vessels, while the arteries of the cortex present numerous anastomoses. If arterial tension be increased, the pressure becomes much greater in the vessels of the corpus striatum than in those of the cortex. Augmentation of pressure in the arterial system produces elongation of the artery of the corpus striatum and causes little lateral dilatations. Little by little, if these variations of pressure are repeated, the muscular tunica atrophies, the dilatations remain permanent and the slightest exaggeration of pressure causes the vessel to give way. In treatment the ice-cap is irrational. On the one hand, it is impossible the action of cold can penetrate the interior of the cranium to the source of the hæmorrhage; on the other, if it exercises its influence on the cortex, it determines a contraction of those vessels which can best drive the blood towards the central parts, and still more increases the blood-pressure there. The only rational treatment is absolute repose of the body, with the head raised.

A. F.

ATONIC (RELAXED) PARAPLEGIA CAUSED BY COMPRESSION OF THE SPINAL CORD.

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Translated by W. J. Herdman, Prof. Dis. Nerv. Sys., University of Michigan.

Concluded.

AUTOPSY.

Microscopic Examination.—Upon opening the spinal canal the dura-mater was found to be very thick at the level of the gibbosity extending over a length of 4 to 5 centimetres, and adherent to the posterior surface of the vertebral bodies. It was affected by a caseous degeneration visible upon the external surface; its internal surface, on the contrary was smooth and did not adhere to the pia-mater. The spinal cord compressed to the level of the centre of this pachymeningitis seemed a little shrunken, but presented no manifest alteration exteriorly, nor upon a transverse cut. Above and below the affected region in the pyramidal tracts and in the columns of Goll, in a fresh condition, nothing abnormal could be seen. After hardening in Müller's fluid, on the transverse section, the area of the pyramidal tracts more particularly to the right and below the compressed region, could be distinguished from the neighboring parts by a lighter color; there seemed to be a slight alteration there.

The vertebral substance of the 4th and 5th dorsal vertebrae adhered to the dura-mater and was friable.

In the upper part of the lungs tubercular granulations were found. There were no abnormal indications in the heart, liver or spleen.

The bladder and ureters, contained urine mixed with pus. The left kidney was transformed into a cyst filled with a seropurulent liquid and the calices were distended; the renal parenchyma was notably atrophied. The right kidney was of normal size and presented traces of amyloid degeneration.

The left femoral vein was filled by a clot which adhered slightly to its wall.

Microscopic Examination.—In the portions of the spinal

cord at the level of the centre of the pachymeningitis, and below in different portions of the pyramidal tract and in the columns of Goll, granulated bodies were very rare and seemed no more numerous than in the normal state. After hardening the spinal cord in Müller's fluid, transverse sections were made which were colored some by Weigert's process and others with carmine. At the level of the centre, the interstitial tissue in the area of the lateral tracts seemed more abundant than in the normal state; the nerve fibres on the contrary, were more scattered, but the lesions were slightly marked. The columns of Goll were normal above the compressed region. Below this region the pyramidal tracts were a little sclerotic. This sclerosis, the reality of which, on the left side, may be doubtful, was incontestable on the right; the lesion was however, very slight, much less marked, for example, than that which develops habitually after hemorrhages of the internal capsule. All the other parts of the spinal cord were absolutely normal.

Here, then, is a man suffering during a month and a half with a complete motor paraplegia with amyotrophy and without anæsthesia, with vesico-rectal troubles and eschar of the sacrum; the paraplegia was atonic and the tendon reflexes were completely abolished. Microscopic examination has shown that the spinal cord in the compressed region, presented only slightly marked lesions and that the consecutive sclerosis of the lateral tracts was quite rudimentary. Death should be attributed to poisoning caused by amyloid degeneration of the kidney and the infection provoked by the pyelo-nephritis. But, from the particular point of view which occupies us, this is of no special interest.

CASE II.—Louis Moreau, aged 71 years, a shoemaker, admitted August 8, 1870, in the ward Rayer. There was nothing interesting to report either in his hereditary antecedents or in his personal history farther back.

The first morbid manifestation which seemed to have any relation to the present affection appeared fifteen months ago. One day as he was walking in the street, he felt a giddiness and fell to the earth without entirely losing consciousness; passers-by assisted him and he was able to walk home; the next day he felt very much depressed, but the day after resumed his work.

From that time he had frequent attacks of giddiness which accompanied vertigo and made it necessary for him to catch at some support in order to avert a fall ; he once fell into a cellar receiving a wound of which he still carries the scar.

April 5th, 1890, he fell, as the result of giddiness, in the Rue St. Honoré and could not rise ; he was taken home in a carriage ; although he was not then in a condition to walk, he noticed that he could move his limbs about in bed. The next day he observed that the right side of the body (both upper and lower limb) was weaker than the left, and perhaps a little less sensitive ; but there was no change in the muscles of the mouth nor embarrassment in speech. He was taken upon a stretcher to the central office and was admitted to the Hôtel-Dieu annex, under the care of M. Chartreusse. About ten days after the last fall his situation began to ameliorate a little ; he was able to rise and take a few steps in the hall ; but this improvement lasted but a few days ; he was soon obliged to keep his bed and never left it again.

From this time his condition was about stationary in all that concerns, at least, the paralysis of the lower extremities. The paresis of the right arm, on the contrary, after having persisted during several weeks diminished and finally disappeared.

This following is the report from the time of the admission of the patient to La Pitié :

It was impossible for him to rise and stand erect ; at the same time the paraplegia was not complete. He could with great effort bend the thighs slightly, and the legs, but he was absolutely incapable of lifting the limbs above the level of the bed. He could not raise his feet ; it was only with great difficulty and feebly that he could make a movement of flexion. The lower limbs were completely relaxed ; the muscles were shrunken, but there was no localized amyotrophy. The electro-faradic contractility appeared normal. The tendon reflexes were very weak especially on the right, the foot clonus was lacking. Sensibility was preserved in all its forms.

The upper extremities were weak, but all the movements were capable of being executed in the normal manner. The thenar eminence was shrunken on both sides. There was no facial paralysis, and no difficulties of speech. In the sacral region there was diffuse redness and a superficial eschar of the dimensions of a five franc piece.

The patient insisted that he felt the calls of nature but was obliged to satisfy them immediately. The functions of the sphincters of the bladder and anus were weakened; it was not a case of incontinence from retention for the bladder was not distended and there was no retention of urine. There was no distortion of the vertebral column and it was not painful to the touch or to pressure. No renal troubles; nor *arcus senilis*. The intelligence seemed unimpaired, but the memory was enfeebled. The arteries were atheromatous. Examination of the other viscera, thoracic or abdominal, revealed nothing abnormal. The urine contained neither sugar nor albumen. The patient has been examined at intervals ever since his admission, and it is reported that the paraplegia becomes more pronounced while preserving the characteristics noted in the beginning: the weakening of the tendon reflexes is maintained and the lower limbs preserve their flaccidity; at the same time it is impossible to extend the left leg completely upon the thigh; the muscles are in a state of complete relaxation, but when the completion of the extension is desired and a certain limit is passed, there is a sudden resistance which is manifestly due to fibro-tendinous retractions.

Sept. 8th.—The patient complained of difficulty in deglutition and respiration. The examination of the lungs gave a negative result. These troubles persisted during the following days.

Sept. 12th.—In the morning the patient was found in a coma; the respiration was accelerated; the rectal temperature was 40.9° C. This condition continued for twenty-four hours, and September 13th the patient died.

AUTOPSY.

Microscopic Examination.—The cerebral meninges and the cerebrum examined upon the surface and upon many transverse sections presented nothing abnormal, except that the arteries of the base are atheromatous.

The spinal dura-mater in the cervical region, at the level of the 4th, 5th, 6th and 7th pairs adhere strongly to the posterior face of the vertebral body and it was very much thickened; when a longitudinal section was made of it, it was seen to be doubled in two leaves between which was found a layer of yellowish white pus, very dense. The spinal cord presented a depression in this region; it was injected at its surface, but it was detached as in the normal state from the dura-mater which was smooth on its inside

face. The other parts of the spinal cord above and below the centre of compression, at their surface and upon transverse sections, bore a normal aspect both in the fresh state and when the spinal cord was hardened in Müller's fluid.

The vertebral column was not distorted. The vertebrae examined with care in the region where the purulent centre existed, seen upon their external and internal surfaces and upon their sections to be free from alterations. The heart was surcharged with fat; the left ventricle was hypertrophied; no valvular lesions; the aorta was atheromatous. The lungs were congested at the bases and were emphysematous. The liver was slightly sclerotic. Nothing to report as to the spleen or the gastro-intestinal canal.

Microscopic Examination.—An examination was made of the portions of the spinal cord in a fresh state at the level of the lesion; below the centre, in the different parts of pyramidal tracts, and above the centre in the tracts of Goll.

The tissue did not seem to be altered; no granulous bodies were found, or at least, if they were discovered in certain preparations, they appeared no more numerous than in the normal condition.

After hardening the spinal cord in Müller's fluid, transverse sections were made which were colored, some by Weigert's process and others with carmine. Careful examination of these different sections, whether from the pachymeningitis or from parts of the spinal cord situated above the centre or below it, in the dorsal region or in the lumbar region did not show a well defined lesion. It might be said that at the level of the centre of compression the neuroglia was a little thicker than usual, and that the same was true of the neuroglia of the pyramidal tract in the dorsal region; but, if these alterations did exist, which is doubtful, they were very small, especially if the age of the subject is taken into account.

This examination may be summed up as follows: The patient was subject for more than a year to attacks of vertigo accompanied by weakness of the lower limbs; these symptoms were at first transitory.

But one day after an attack of giddiness, the patient fell and was unable to rise; he was attacked at the same time with paraplegia and right hemiplegia with face unaffected. The weakness of the right arm disappeared immediately, but the lower limbs were paralyzed, seriously though not

completely; the patient was able to move very little. There were at the same time some vesico-rectal troubles and a superficial eschar upon the sacrum. The legs preserved their sensibility and the muscles were not atrophied. They were relaxed and the tendon reflexes were enfeebled. This paraplegia persisted, without modification, during five months or until the death of the patient.

The microscopic examination established the anatomical integrity of the spinal cord. The fever which developed toward the last seems to indicate that the patient succumbed to infectious disease; but the histological and the bacteriological study of the viscera not having been made it is impossible for us to be certain in this respect. This side of the case is of no interest from the point of view which occupies us.

The two following cases, for one of which I am indebted to Kadner¹ and for the other to Druschky, although very succinct, merit a place with the two preceding cases.

CASE III.—From Kadner's Memoir. Carcinoma of the upper four dorsal vertebræ. Relaxed paraplegia with disturbance of sensibility, retention of urine and eschar. The motor paraplegia was complete during seventeen days and during that time the reflex of the Achilles tendon was weak and the patellar reflex was lacking. The autopsy showed that there was no secondary degeneration.

CASE IV.—Druschky's. In a case of compression of the spinal cord following an external meningitis located between the second and sixth dorsal vertebræ, the foot clonus was absent. The autopsy showed that there was no secondary degeneration.

The author enters into no further details on this subject. The considerations into which I entered in the first part of this work permit me now to be brief. The consequences which follow from the observations just related seem to me manifest.

We have long known that a paraplegia of spinal origin may be due to a simple compression of the spinal cord,

¹ Kadner. Zur Casuistik des Rückenmarks-compression. Arch. d. Heilk. xvii. 1876. s. 489.

without destruction of the tissue ; the well known examples of paraplegia resulting from vertebral fractures or luxations, disappearing after their reduction, furnish proof of it ; but in this case the paralysis is of short duration. But it is scarcely admitted that a paralysis of long standing could result in the same manner, or at least, this idea is not yet classic. Some observations show however, that such might be the case. M. Joffroy² observed a case of compression of the lumbar enlargement and of the equinus by a secondary sarcoma of the *dura mater* having given rise, during more than four months to a complete paraplegia, without any lesion of the nerves nor of the spinal cord.

The facts which we relate establish clearly that the compression of the spinal cord in the dorsal or cervical region, may, without determining an appreciable organic lesion produce a very marked and even complete motor-paraplegia of several months duration, which is accompanied by vesico-rectal troubles and trophic alterations of the skin. The tracts of the spinal cord may then, under the influence of compression, lose their physiological properties, without being modified in any apparent manner in their structure. This remark does not apply, it is true, except to centrifugal fibres and more especially to motor fibres ; it is not the same with sensitive fibres, for in one case anæsthesia was completely wanting, and in this case the sensibility of the paralyzed members was almost completely preserved.

The pathology of the peripheral nerves furnishes us with facts which may be placed with the preceding ; the radial motor paralysis resulting from a compression may last several months without being accompanied with troubles of sensibility and without, in all probability, any notable alteration of the nerve fibres.

On the other hand these facts show that a paraplegia resulting from a spinal compression may remain relaxed during several months without any alteration of the gray matter of the lumbar spinal cord, without the alteration of the external radicular zones at this level, without lesions of

² JOFFROY. *Bulletins de la Société Anatomique*, 1871.

the peripheral nerves and without the destruction of a portion of the spinal cord in its whole diameter.

It seems to me impossible to interpret these facts and to determine the cause of this flaccidity.

The anatomical examination showed, in effect, that the pyramidal tracts were in a state of complete integrity or nearly so. Now, we have seen that in the immense majority of cases of compression of the spinal cord the spasmodic phenomena have for an anatomical substratum lesions of the pyramidal system. It is not surprising, therefore, that the exaggeration of the tendon reflexes is lacking.

But we must question as to why the inverse phenomenon developed, and why the tendon reflexes were weakened. We think it will be permissible to consider this due to the cachectic condition of the patients.

I call attention to the fact that it would be illegitimate to conclude from our observations that a spasmodic paraplegia due to a spinal compression is necessarily connected with organic lesions of the pyramidal system. Such an affirmation would be contradicted by Colman's case which has been cited; in this case it is a question of paraplegia by compression with exaggeration of the tendon reflexes and epileptoidal tremors; the anatomical examination has shown that the spinal cord was normal.

The comparison of these dissimilar facts gives cause for reflection. It is not illogical to sustain as a hypothesis, that according to the intensity of compression to which the nerve fibres are subjected, according to the general condition of the patients, the centres of the tendon reflexes are submitted to a dynamic action or an inhibitory action.

Whatever be the interpretation given to these phenomena their reality cannot be contested. It may be remembered in connection with this subject, that in disseminated sclerosis, an affection in which the nerve fibres are also subjected to compression, the tendon reflexes may be, as in the case which we are studying, normal, exaggerated or abolished.

Then the spasmodic condition of a paraplegia by com-

pression does not constitute the characteristic mark of an organic lesion of the spinal cord.

We have seen on the other hand, that the flaccidity of a paraplegia does not constitute a certain indication of the integrity of the spinal cord. But we have been able to determine the circumstances in which a relaxed paraplegia can be connected with a spinal lesion. We have insisted sufficiently on this point not to return to it; and we have the right to deduce from this study the following conclusions: When a relaxed paraplegia caused by spinal compression lasts more than a month, when the arc of the tendon reflexes presents no lesion, when no portion of the spinal cord is destroyed throughout its diameter, there is reason to suppose that the nerve fibres of the spinal cord are intact, or at the most that their alterations are very slight.

I have not the right however, to formulate, at this time, such a proposition without making some reservations.

I have already announced the hypothesis that the dynamic influence exercised upon the centres of the tendon reflexes by a secondary sclerosis, may be annihilated by a cause which will act in an inverse or inhibitory direction; it is not irrational to suppose, for example, that in case of a diabetic or a cachectic attacked by descending degeneration the reflexes would not be exaggerated. There may be other unforeseen causes which will counterbalance the spasmodic action of the secondary sclerosis.

Nevertheless, the preceding conclusion may be accepted provisionally.

It seems to me that it will be henceforth possible, in taking these observations into account, to establish clinically, in analogous cases an exact diagnosis.

Let us suppose, for example, that we have to do with an atonic paraplegia resulting from an alteration of the upper or middle dorsal vertebræ. Let us admit that this paraplegia has already lasted several weeks, and that none of the signs exist which denote the alteration of one of the parts of the arc of the tendon reflexes (motor nerves, sensitive nerves, external radicular zone, gray matter and anterior cornua).

The problem is immediately defined and there remains to be determined only, whether the flaccidity is due, as in the cases of Bastian and Bowlby, to a serious lesion, or as in my observations, to the absence of organic lesions. If these two orders of facts present, from an anatomical point of view, a striking antagonism, it is none the less true that there may exist great clinical analogies between them, for in either case the motor paraplegia and the abolition of the tendon reflexes may be absolute. In any case the diagnosis would be easy, for in the facts of the first group, the paraplegia is accompanied by a profound anæsthesia, while in the observations of the second group the paralyzed members preserve their sensibility more or less completely.

Is it necessary to call attention to the fact that it will be of great practical interest to make in cases of this kind a precise diagnosis.

It can be admitted, *à priori*, that other things being equal, the prognosis will be less grave when it has been established that nervous troubles exist which are due to a superficial compression of the tissues, that they are not seriously disorganized and that secondary degenerations are wanting. It is true that the existence of more marked alterations, of sclerosis of the pyramidal tracts, does not imply a desperate prognosis, and it is not rare, especially in Pott's disease, to see persons affected with spasmodic paraplegia, recover in time the use of their limbs. One of the finest observations of this kind was made in the service of Prof. Charcot, at the Saltpetrière, and published by M. Michaud. It was the case of a patient who, after having been attacked with spasmodic paraplegia, which reduced her to absolute impotence, was cured, and was able, at least for a time, to walk without cane or crutches; she remained in this condition four years and succumbed then to the effects of coxalgia; the examination of the spinal cord revealed marked alterations, which were located above the centre, in Goll's tracts, and below the pyramidal fascicles. There will be found also, in M. Charcot's Tuesday Lessons¹ the

¹ Tuesday Lessons 1888, 1889, p. 176 and following.

account of an extremely interesting case in which the recovery of a spasmodic paraplegia, from Pott's disease which had lasted three years, has been permanent for twenty years, and in this long period there has been nothing abnormal observed in her walk.

However, if analogous observations were always collected with care, it would be perhaps seen that there would not be an absolute return to the normal condition. This is the opinion of Prof. Charcot, who expresses himself thus on this subject: "How can we believe that a spasmodic paraplegia, evidently caused by the slow compression of the spinal cord, a compression which necessarily, to the best of our knowledge, has produced in the nervous tract, at the level of the point compressed, lesions of transverse myelites; how can we believe, I say, that a paraplegia of this order, dating back three years, and having persisted in the highest degree during a period of one year, can be cured without leaving an apparent trace? This point I will return to in an instant. I haste to mention, gentlemen, that this integrity, which might be thought absolute, of the lower limbs, is but a deceptive appearance. Spasmodic paraplegia persists in some form in a rudimentary condition, in cases which seem completely cured of the spinal compression, caused by Pott's disease. This latent paraplegia, if one may call it so, may not, as was seen in the case of B—t, manifest itself by any anomaly in the walk, but is revealed by the aid of certain explorations, which bring to light significant indications. In the case of B—t, each time I have made him the subject of a demonstration, I have reported the existence in the lower limbs of a tremor when the foot was straightened, which was quite marked, and since I have learned to recognize Westphal's sign, a manifest excitement from the shock produced in the leg by the pressure of the rotulian tendons.

"Well, gentlemen, I will state, from having seen it many times clinically, that when the case is of this sort, whatever the spinal affection in question, the spasmodic paraplegia really exists in power, in a condition of opportunity," as M. Brissaud has said, "and often only an exciting

cause is needed, accidental in appearance, to realize definitely permanent rigidity, under a more or less marked form."

On the contrary, in cases similar to those which we publish here, it is easy to conceive the possibility of real and complete cure. The lesions of the spinal cord being, as has been seen, nul or quite rudimentary, and the functional troubles being, so to speak, purely dynamic, it is rational to admit that if the agent of the compression disappears, or if the process of pachymeningitic inflammation has been simply checked, at a given moment the functions might be re-established in all their integrity. He resorts then to bringing these two orders of facts together, to which he is not indifferent from the point of view of prognosis, to learn to distinguish one from the other.

It may be urged that it is of importance from a therapeutic point of view, to make an exact diagnosis, and to know how to recognize the varieties of paraplegia, with which we are occupied.

I think in fact, that the resection of the spine, followed by the removal of the tissues which confine the spinal cord, would be especially suited to cases of this order. There is reason to admit that in these patients the organic resistance of the spinal cord is not unlimited, and it is permissible to suppose that in time the compression might provoke the development of spinal lesions. On the other hand, it is rational to suppose that in removing this compression, the disappearance of the functional trouble depending on it will follow.

The operation seems to me to respond to a double indication, it may be considered as a preventive means and as a curative process. It is self-evident that surgical intervention may be inadvisable from circumstances independent of the paraplegia and arising from a bad general condition.

The conclusions which it seems to me may be drawn from this study, are as follows :

1st. A compression of the spinal cord may, without producing an appreciable lesion of the organ, give rise to an

intense and perhaps complete paraplegia, capable of being prolonged for several months.

2d. When, in atonic paraplegia of a duration longer than a few weeks, resulting from a compression of the spinal cord, the flaccidity can be attributed only to a lesion occupying some part of the reflex arc, and is also not due to the destruction of a portion of the spinal cord in its entire diameter, it is permitted, for the present, to believe that the spinal cord is not changed, or only slightly changed.

3d. There is reason to admit that this variety of paraplegia, aside from extrinsic circumstances, permits a relatively benign prognosis.

4th. When the general condition of the invalid is not opposed to it, surgical intervention seems particularly indicated in cases of this kind.

DISSEMINATED SCLEROSIS.

In the "Archives of Ophthalmology" for July, 1891, Zimmermann reports the following case:

W. F., painter, æt. 26, complaining of dimness of sight in right eye for eight weeks, and also of diplopia. Vision, R. = $\frac{15}{70}$, L. = 1. Field of vision and perception of colors normal. Both pupils normal. Upon *ophthalmoscopic examination the temporal two-thirds of both discs were found to be perfectly white*. There was crossed diplopia from paresis of the right internal rectus. Under iodide of potassium and hypodermic injections of strychnia, vision improved. Two months later vision was normal in both eyes, and the diplopia had disappeared. The ophthalmoscopic appearances, however, remained unchanged. Four years later the patient had developed a primary spastic paraplegia, and subsequently many of the symptoms of a disseminated sclerosis.

He states in conclusion that *atrophy of the optic nerves, when associated with the symptoms of primary spastic paraplegia, is the most valuable and reliable guide in the diagnosis of disseminated sclerosis.*

W. M. L.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

<i>From the Holandish, Swedish, Danish, Norwegian, German, Portuguese, Roumanian, Spanish, and Italian:</i>	<i>From the French, German and Italian:</i>
F. H. PRITCHARD, M.D., Norwalk, O.	JOHN WINTERS BRANNAN, M.D., New York.
<i>From the Swedish, Danish, Norwegian and Finnish:</i>	<i>From the Italian and Spanish:</i>
FREDERICK PETERSON, M.D., New York.	WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.
<i>From the German:</i>	<i>From the Italian and French:</i>
WILLIAM M. LESZYNSKY, M.D., New York.	E. P. HURD, M.D., Newburyport, Mass.
BELLE MACDONALD, M.D., New York	<i>From the German, Italian, French and Russian:</i>
<i>From the French:</i>	ALBERT PICK, M.D., Boston, Mass.
L. FISKE BRYSON, M.D., New York.	<i>From the English and American:</i>
G. M. HAMMOND, M.D., New York.	A. FREEMAN, M.D., New York.
	<i>From the French and German:</i>
	W. F. ROBINSON, M.D., Albany.

PATHOLOGICAL.

SO-CALLED CEREBRAL PACHYMENINGITIS— (SUB-DURAL HÆMATOMA).

This disease is usually described as commencing with the formation of a delicate film on the inner surface of the dura-mater, upon which similar films develop, producing in time a membrane. The films are permeated with thin walled capillaries, which frequently rupture and give rise to hæmorrhagic effusions. Joseph Wigglesworth, M.D., Lond. M. R. C. P., opposes this inflammatory doctrine, and in the "Liverpool Medico-Chirurgical Journal," July, 1891, offers some of the following observations in favor of the hæmorrhagic origin of this affection: In the primary film there can be detected no trace of any inflammation, according to the author. The vascular adhesions forming between the new membrane and the dura are similar to what happens when a thrombus forms in a vein. The lamination of the membrane may be accounted for in the same way that we explain the layers of fibrine in an aneurismal sac. Cases continually occur in which blood and clot are found in the subdural space, without any membrane, leading to the inference that membrane is formed from the blood and not the blood from the membrane. Several cases have been

seen presenting subarachnoid hæmorrhage, associated with a recent membrane, where it has been possible to trace the actual rupture in the arachnoid through which the blood escaped. There is a greater tendency for the blood to rupture direct into the sub-dural space than to spread beneath the arachnoid, which is accounted for by the conditions present in many cases of insanity and general paralysis, in which the adhesion between pia and arachnoid, over the summits of the gyri, is so great as to constitute one membrane, and in bursting into the arachnoid cavity, the blood follows the lines of least resistance. These pachymeningitic membranes occur under conditions which favor hæmorrhage, being associated in overwhelming proportion with brain degeneration and atrophy, especially when these conditions are combined with congestion of the meninges. Brain atrophy is the proximate cause of the hæmorrhage, the meningeal vessels suffering thereby a loss of support, and with this we have meningeal congestion, and further, degeneration of the vessels themselves, a series of circumstances highly favorable to the effusion of blood. A. F.

PROGRESSIVE BULBAR PARALYSIS.

Nothnagel (*Internat. klin. Rundschau*, 1891, No. 17-20), in presenting a patient with this disease, makes the following observations:

Speech disturbances, such as difficulty in articulation, lead to the diagnosis of bulbar paralysis. The patient speaks as if he had something in his mouth. The mobility of the tongue seems to be interfered with, the lingual sounds giving him the greatest difficulty. There are demonstrable fibrillary contractions and atrophy of the tongue. We have to do with either a peripheral lesion affecting the trunk of the hypoglossal nerve or an atrophy of the hypoglossal nucleus. In lingual paralysees of central origin there is paresis of the tongue, yet fibrillary contractions and pronounced atrophy are absent. A third possibility is the wasting of the substance of the tongue from disease in the organ itself. The wasting of the tongue in tabes seems to be due to atrophy of the hypoglossal nucleus. The commonest causes of dysarthria are either dementia paralytica or progressive bulbar paralysis. In the former, speech is syllabic, in fact, ataxic. In the present case there is, furthermore, paresis of the facial nerve and the muscles of deglutition. We thus have a case of glosso-labial-pharyngo-laryngeal paralysis. In its further progress there will be paresis in the distribution of the accessorius and the vagus (marked

increase in the frequency of the pulse and dyspnœa). The nuclei situated collectively in the medulla will be attacked one after another. We are dealing with a primary degeneration of the nuclei and not with an inflammation. One speaks of acute apoplectiform bulbar paralysis, when the manifestations appear in an apoplectiform and sudden manner (hæmorrhage or thrombosis in the vertebral). Lepin has, therefore, called attention to the fact, that in bilateral lesion of the lower portion of the central convolutions we have a similar clinical picture (pseudo-bulbar paralysis). However, the paralyses are not symmetrical, and moreover the paralyses of the extremities are demonstrable, while the electrical irritability remains normal. The symptoms also appear suddenly. We also differentiate a total from a partial ophthalmoplegia. In the present case the latter condition exists (left ptosis, contracted pupil, paresis of the left external rectus and the right internus).

The prognosis is unfavorable in all degenerative processes affecting the brain and spinal cord. The most rational plan of treatment is by electricity. In most cases when the pharyngeal muscles become atrophied and paretic, we must look after the patient's nutrition. Internally we may administer iodide of potassium or ergotin. Some have seen improvement following the use of nitrate of silver. (*Centralblatt f. klin. Med.*, No. 37, 1891.) W. M. L.

CLINICAL.

COMPRESSION OF THE CAUDA EQUINA AND ITS TREATMENT.

L. Laguer records the following case: A nineteen-year-old locksmith, L., fell sick in September, 1888, with very violent pains in the small of his back, especially severe during the night and which resisted all treatment. Examination at first revealed neither motor nor sensory disturbances, atrophy, nor alterations of the reflexes. An improvement took place which lasted several months. Finally, in September, 1890, not only the back pains returned, but also disturbances in urination and defecation. The patellar reflex on the right side was absent, on the left was diminished. The recti femoris on both sides were slightly atrophied. The patient would walk about in a shuffling manner, with his body bent forward. Slight kyphosis of the lumbar region developed, as well as a

bed-sore on the right trochanter. All these, as well as the symptoms—great painfulness of the sacrum to pressure, weakness of the sexual function—led to a diagnosis of a neoplasm of the cauda equina with compression. Operation confirmed the diagnosis, for a cavernous lymphangioma, of the size of one's little finger, was removed from the sacrum. The tumor was situated extradural in the middle of the sacrum, and extended into the spinal canal, pushing the cord and dura well forward. The general and local symptoms, especially the painfulness, general weakness and sleeplessness, disappeared at once; the patellar reflexes reappeared, and the patient was nearly entirely cured. The writer then considers extensively the general symptomatological and diagnostic questions of the case; cites the entire literature on caudal lesions from Schultze, Thornburn (Brain, 1888), to Eisenlohr. He regards the paraplegia as characteristic of caudal disease. The lumbar kyphosis the writer looks upon, like Charcot the scoliotic sciatica, as due to a strained posture on account of the pains. (*Neurologisches Centralblatt*, No. 7, 1891.)

F. H. P.

RETARDED HEREDITARY CEREBRAL SYPHILIS.

Charcot publishes a case of retarded hereditary cerebral syphilis in the "*Bulletin Médical*," February 11th, 1891.

The case was that of a woman of thirty years, who had for some months, without demonstrable cause, suffered from violent pains in the head, situated in the left parietal region. These commenced towards evening and were very intense during the entire night. She also had frequent vomiting attacks. After eight days the pain became general over the entire left portion of the head and finally extended to the right side. This state persisted four months in spite of all treatment, to suddenly pass over into a less violent form. Six days before entering the hospital the patient had an epileptic attack with loss of consciousness, bit her tongue, had involuntary emissions of urine and convulsions which were limited to the right upper extremity. Four other attacks were passed through, together with a slight one after entering the hospital. She always fell to the right side. This latter attack took place after commencement of specific treatment, as syphilis was suspected. On examination a circumscribed and sensitive spot of the size

of a dollar was discovered in the parietal region, corresponding to the arm-centre. There were no exostoses. Concentric limitation of the visual field, a left-sided optic neuritis, a specific atrophic choroiditis, opacity of the transparent media of the right eye and absence of the left inferior turbinated bone established a diagnosis of retarded hereditary syphilis. The patient ascribed the absence of the turbinated bone to a disease which she had passed through at fourteen years. The patient was of neuropathic constitution and presented hemianæsthesia, which symptom Charcot considers as hysteric and not syphilitic. In such cases Charcot says that treatment must be energetic and consist in the administration of large doses of the iodide of potash and inunctions of mercurial ointment. The prognosis in this case was good; it is much graver in those cases where there are symptoms denoting destruction of tissue. In general, it may be said that hereditary syphilis is more obstinate than the acquired and requires a protracted course of treatment.—(*Gazzetta degli Ospitali*, No. 43, 1891.)

F. H. P.

ANENCEPHALUS.

P. Schoonmaker, M.D., (*Brooklyn Medical Journal*, September, 1891) reports a case of this kind presenting entire absence of the parietal and upper portions of frontal and temporal bones. There was a folding in and forwards of the occipital bone, overlapping the petrous portion of the temporal, leaving an opening about the size of the foramen magnum, and anterior to this was a body resembling a miniature cerebrum, devoid of cutaneous covering only at its edges. It had a thin fibrous membrane resembling dura mater, beneath which the mass was made up of connective tissue and blood vessels, but was devoid of brain tissue. There were two cavities corresponding to the lateral ventricles and a common canal leading from these into the occipital vault. The cerebellum was rudely developed and contained some brain tissue. The body of the fœtus was large and well developed and the face well proportioned. It lived some eight hours and died in convulsions. The mother, when between one and two months pregnant, had received a severe fright by the stuffed skin of an alligator being thrown at her.

A. F.

THE USE OF DIURETIN-KNOLL IN GENITO-URINARY SURGERY.

Under the above title Dr. Edward L. Keyes, of New York, recently read a paper before the American Association of Andrology and Syphilology. After mentioning the various measures which had been employed for the prevention of "urinary fever" after operations on the urethra and bladder, and the small benefit he had himself derived from them, he calls attention to the case of an old gentleman from whose bladder he had removed a large stone, at the same time removing an outstanding third lobe. After the operation the case looked desperate, and the patient was given ten grains of diuretin, which dose was frequently repeated. The patient recovered, and since then Dr. Keyes has given diuretin in every case of urethral or bladder operation falling under his hands. On the day of operation he gives ten grains of diuretin every four hours for forty-eight hours. Since using the drug he has never seen a case of chill or suppression of urine following the operation. Diuretin is a free diuretic and does not irritate the stomach nor depress a weak heart.

EXALGINE IN THE TREATMENT OF NERVOUS DISEASES.

As numerous experiments are being made at present with this drug, we append the results of several investigators' work to ascertain its real value in therapeutics.

Dr. George Herschell (*Deutsche medicinal-Zeitung*) has observed important and permanent beneficial effects following the exhibition of exalgine in locomotor ataxia. The pains are distinctly alleviated after the second dose, and in some cases remain absent for a long period. In a case of ataxia, in which the patient had had gastric crises, with severe attacks of vomiting, the administration of 0.6 of exalgine, half an hour before the seizures, eventuated in the permanent relief of the condition. Trigeminal neuralgia, which was one of the obstinate affections to deal with, had not only been relieved by this drug, but recurrence of the paroxysms had been prevented for three and four months at a time. In ischiatica several severe cases had been cured in two days by the administration of 0.2 of exalgine three times daily. The pains of herpes zoster were relieved after

the second dose of the drug was taken. Dr. F. Sinclair (*British Medical Journal*) said that from his observation with this medicament he was satisfied that it deserved a permanent place among the analgesics, as being one that was prompt in action, was safe, and could always be relied upon. By giving it in broken doses of from 0.03 to 0.06 it was free from any danger of producing intoxication. If after the first dose the pain was not relieved, it should be repeated in one-half hour; it was seldom that four doses had to be given consecutively. The class of patients to which this drug was most applicable were those persons of neurotic temperaments, suffering with pain of a functional character and also pain from dietetic causes. Pain of an organic or mechanical nature was not influenced by exalgine. During the recent epidemic of influenza this drug exerted marked alleviation on the attending paroxysms of pain. In angina pectoris its influence for good was very noticeable. Henry Semple (*ibid.*), in treating an hysterical patient for nervous headache, gave as large dose as 0.12 twice daily and increased it to 0.3, with the effect of the pain being absent for eight hours at a time. On the recurrence of the headache two doses were given in quick succession with the result, in fifteen minutes, of a sudden scream and the patient saying she was dying. The skin and fingers became numb, there was nystagmus, with intermittent numb feeling in the head and a very heavy sensation in the region of the diaphragm. After a few moments emesis took place, with a very marked improvement in the general condition of the patient. Sleep followed. The pain in the head came on again in two hours, the numbness continued in the fingers for the whole day. So that the author concludes that for the drug to be safe it should not be given in greater quantities than 0.12.

THE TREATMENT OF NEURALGIAS WITH CHLORMETHYL.

The "*Deutsche med. Wochenschrift*" contains an article by Steiner on the benefits to be derived from the use of this material in the treatment of the several neuralgic conditions which yield so obstinately to the known remedies. The chlormethyl (CH_3CL), or monochlormethane, originally a gas, becomes fluid through the pressure of four atmospheres; in this condition it is carried into copper syphons. An apparatus is fitted to the bottle by which means the chlormethyl is allowed to escape as a thick cloud directly against the painful part to be treated. The part becomes as cold as

if the application had been made with ice; at no time has this been followed by gangrene; at the most, only causing a red spot on the skin. The remedy not alone lowers the temperature, but also the excitability of the sensory nerves and in this way acts as an important agent in lessening and dissipating pain. As a local anæsthetic the remedy is well known in France, where it has been used with considerable success by Debove. Steiner prefers this application in the neuralgias to quinine, antipyrine or phenacetine, etc., and says that massage and electricity may be used in conjunction with it. The application is made daily, the looked-for result is attained at once, and the pain does not return after the first week of treatment. He has so treated several very severe cases of ischiatic neuralgia, traumatic neuroses, pruritus vulvæ, and trigeminal neuralgia, and from the good results obtained is able to advocate its use very highly.

B. M.

TREATMENT OF INFANTILE PARALYSIS.

Dr. Simon, the renowned Paris specialist in children's diseases, recommends the following treatment for infantile paralysis: At first counter-irritation along the vertebral column at the points corresponding to the roots of the paralyzed nerves. At the same time stimulate the functions of the skin by warm baths or vapor baths, given to the child in bed.

Chloral, aconite and conium are used to calm the nervous excitement.

After the first week electricity should form the basis of the treatment. Weak galvanic currents should be used, the negative pole being placed in a basin of water, into which the hand is plunged, while the positive pole is applied labile to the arm and shoulder. Length of treatment eight to ten minutes.

Later, faradism is to be used, but always with the greatest prudence.

W. F. R.

ON THE EMPLOYMENT OF EXALGINE IN INFANTILE THERAPEUTICS.

Dr. Moncorvo's researches have been carried out on a total of twenty-one children from the age of one and a half years to twelve. In all these cases the exalgine was given to combat the element of pain, and exceeded his expectations. In fact, in not a single case was he disappointed in its effects, and in every instance tolerance was perfect.

There was no dizziness, ringing of the ears, or other unpleasant effect observed. Ordinarily the action of the drug was easily obtained, amelioration of the pain being generally established in an hour after the administration of the drug, not rarely it was quite abolished by that time.

SUMMARY OF CASES TREATED.

Neuralgia.....	2 cases.
Migraine.....	4 "
Otalgia.....	1 "
Odontalgia.....	2 "
Gastralgia.....	2 "
Hepatalgia.....	1 "
Pleurodynia.....	1 "
Dry Pleurisy.....	1 "
Articular Pain.....	2 "
Otitis.....	2 "
Torticollis.....	1 "
Pott's Disease.....	1 "
Lymphangitis and Arthritis.....	1 "
Total.....	21 cases.

The following are the conclusions reached :

1. The great activity of exalgine as an analgesic has been, without exception, well demonstrated in these twenty-one diverse cases of pain.

2. In children complete tolerance has been established, and in no case was there any appearance of disagreeable results.

3. The initial dose should be five cgm. ($\frac{1}{4}$ gr.) a day and rise progressively to 30 cgm. ($4\frac{1}{2}$ grs. a day).

4. The drug may be given in any acceptable way—solution, capsule, or placed on the base of the tongue and washed down by a swallow of wine and water.

5. Exalgine surpasses antipyrin in activity, even in cases where the dose of the latter is five times as great.

6. The value of the drug as a nervine seems probable from the results obtained in one case of chorea. (Bull. Gén. de Thérap., May.)

Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Dr. WHARTON SINKLER, Pres.; Dr. G. M. HAMMOND, Sec.

*Seventeenth Annual Meeting, held at Washington, D. C.,
September 22, 23, and 24, 1891.*

THE PRESIDENT'S ADDRESS.

GENTLEMEN:—I feel deeply sensible of the honor you have conferred upon me in electing me your President for this year. Why such an unworthy member as myself should have been chosen, I am at a loss to understand, and I can only regard it as an evidence of the great good nature of the members of this association.

I well remember my first introduction to the association; it was in its early years, and its membership was small compared with what it is now; but the members were full of interest and enthusiasm, and it is due to their efforts that the association is what it now is. It was a great pleasure to come in contact with and see face to face, men whose names were classical in connection with neurology. Hammond was president, and Seguin, whose untiring interest did so much to promote the growth of the association, was secretary; Beard, Jewell and McBride, who have since "gone over to the majority," impressed me strongly by their individuality. Jewell was our first president and filled the office for four years. Amidon, an early worker in brain topography, was there, and so was Birdsall, Dana, Edes, Gray, Gibney, G. M. Hammond, Miles, Mills, Ott, Putnam, Rockwell and Spitzka, who are still active and invaluable members.

It is interesting to recall the fact that this association was one of the earliest of the National Associations of Specialists; I believe it was the third organized; and it was one of the first to favor the formation of the Congress of American Physicians and Surgeons of which we are now a part, which has been instrumental in increasing the importance of the societies composing it, and in promoting the growth of scientific medicine in this country.

The meeting of the Congress three years ago was a great success, and the paper of one of our members, was a leading feature in its proceedings. The prospects for this

year are that the meeting will be equally important and it has attracted a large number of scientific men from all parts of the world.

It is gratifying to note the growth of the society and the more national character which it has assumed of late years. On looking over the list of members one is struck by the fact that they are from all parts of the country. The association was organized in 1875 with seventeen members and in 1881 there were twenty-eight. This year there are seventy, and the council has recommended the election of nine new members whose papers have been handed in. This will make a membership of seventy-nine, only twenty-one less than the limit fixed by our constitution. In view of this fact we should continue to be careful to elect to membership only those who are eminent in neurology and thus keep up our high standard.

I would suggest that in future we make an effort to obtain each year papers from some of the foreign associate or honorary members and thus add to the interest of our meetings.

During the past year we have lost by death one of our members, Dr. James Kingsley Thacher, Professor of Physiology in the medical department of Yale University. He died April 20, 1891. He was a man of high scientific attainments and a deep student.

The year has been an active one as regards the scientific and literary work of our fellows. It has occurred to me that it would be of interest to collect the papers and other scientific communications relating to neurology, published by the members of the association during the past year. I have found the list so much longer than I expected, that I will not tax your patience by reading it all; but as far as I have been able to gather the data, there have been 159 papers and 14 books and pamphlets published by members, during the year. Below will be found a complete list:

DR. SAMUEL AYRES.—Address in Mental Disorders. (Transactions of the Medical Society of the State of Pennsylvania. Medical News, June, 1891.) Gastro-intestinal and Hepatic Disorders, especially Chronic Gastro-intestinal Catarrh in relation to the Etiology of some cases of Insanity. (Medical News, July 4, 1891.)

DR. LUCIUS W. BAKER.—The Care of Epileptics, (Boston Medical and Surgical Journal).—Dipsomania. (Boston Medical and Surgical Journal Sept. 17, 1891.)

DR. H. M. BANNISTER.—A Case of Focal Hæmorrhagic Lesion of the Peduncle (Anterior Cerebellar Peduncle). (The Journal of Nervous and Mental Disease, Sept., 1890).—Medical Treatment of Insanity. (Hare's System of Therapeutics, in press).—Various abstracts, reviews and translations for Dr. McBride's Review, The Journal of Insanity.

DR. W. R. BIRDSALL.—Diseases of the Spinal Cord. (Annual of the Universal Medical Sciences, vol. ii., 1891).—Inebriety, Morphism and Kindred Diseases. (Annual of the Universal Medical Sciences, vol. iv., 1891).

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ACUTE SPINAL PARALYSIS—DEATH ON THE TWELFTH DAY—AUTOPSY SHOWING TRANSVERSE CERVICAL MYELITIS.

DR. WHARTON SINKLER, of Philadelphia, read a paper with the above title, and reported a case which was of interest, because, while having the clinical history both of acute polio-myelitis anterior and of Landry's paralysis, the post-mortem results showed a transverse myelitis involving only the cervical portion of the cord.

The patient was a male, eighteen years of age, with good family history. After exposure to cold, in a few days he complained of general weakness, had fever, some pain in the back, and cramp-like pains in the legs, some diarrhœa. Within four days there was loss of power in both legs, and partial paralysis in both upper extremities. There was temporary inability to void urine, and some difficulty in swallowing. The muscles of the trunk were also paralyzed; both knee-jerks absent; loss of most of the superficial reflexes. Sensation was unimpaired. No muscular pain or tenderness over the nerve-trunks. All muscles reacted to faradism. The patient gradually lost strength, and died of respiratory paralysis on the twelfth day.

From a study of the clinical features of the case the diagnosis lay between acute multiple neuritis, acute myelitis, Landry's paralysis, and polio-myelitis anterior. The author thought it probable that in the early stages of polio-myelitis there is a hyperæmia or inflammation of the cord in the affected areas, which is not confined to the anterior horns.

POLIO-MYELITIS ACUTA ADULTORUM.

DR. WILLIAM C. KRAUSS, of Buffalo, N. Y., read a paper with the above title. See page 704.

DR. CHARLES K. MILLS said that the association of polio-myelitis with multiple neuritis, a question which comes up in connection with the report of Dr. Krauss's case, was of not uncommon occurrence. One type of infantile paralysis was best explained on this view. In the course of several years he had seen a number of cases of this kind, cases in which association of sensory and motor symptoms were present in the early stages. These sensory phenomena were sometimes both anæsthesia and hyperæsthesia, either localized or general. Handling, squeezing, touching, or pressing the limbs sometimes caused much pain. The absence of sensory disturbances in a case reported by Dr. Krauss, would seem to preclude the idea of multiple neuritis in his case; yet it was in cases of paralysis following infectious diseases, like measles, that he had most often seen the association of multiple neuritis with polio-myelitis. This case, with others which have been reported and his own general experience, would seem to prove that after infectious diseases we might have (1) multiple neuritis; (2) multiple neuritis associated with polio-myelitis; (3) pure polio-myelitis. Not long since he had seen a child, four or five years of age, who about a year previously had had an attack of diphtheria; the fever continued for nearly three weeks, and the patient was hyperæsthetic almost everywhere. Her pain and hyperæsthesia disappeared in six or seven weeks, but it was twice that length of time before she could sit up alone. She was left with marked paralysis of the polio-myelitis type in the left lower extremity. Besides infectious diseases, various toxic agents like arsenic and lead were likely to produce this association of nerve and spinal disease. He had seen this occurrence practically exemplified in several cases of arsenical poisoning. He also believed that it occurred as the result of alcoholic abuse and syphilitic infection.

DR. R. T. EDES thought Dr. Mills's point a good one, but doubted if this concurrence is only confined to infectious diseases, but might also result from alcohol.

DR. KNAPP agreed with the preceding speaker. It was probable that lead affected sometimes the nerves primarily and chiefly, and sometimes the cord. The same was true of other toxic agents, among them alcohol. He cited one case, under observation for several years, which began as acute alcoholism; later an ordinary alcoholic neuritis developed, and finally the appearance of vesical symptoms indicated a probable involvement of the cord.

DR. WALTON spoke of a case of multiple neuritis from lead, with atrophy, ataxia, etc., who died after spinal symptoms and cystitis. Absolute differentiation between spinal and peripheral lesions, owing to their co-existence, is sometimes unnecessary.

DR. C. L. DANA disliked to have the impression go abroad that there is no definite lesion in these cases. In all cases of acute or subacute neuritis from alcohol, rheumatism, etc., the lesion was confined almost exclusively to the peripheral nerves. He has numerous specimens in his laboratory to substantiate this view in connection with the clinical histories. In cases of chronic neuritis he was not so positive.

DR. C. H. HUGHES believed that peripheral neuritis is a settled fact, and can generally be diagnosticated. He referred to our errors in earlier days, and was of the opinion that most cases of myelitis were due to exposure to cold, when not occasioned by traumatism. He agreed with Dr. Krauss in reference to the relation of measles to poliomyelitis. He believed all zymotic diseases frequently affected both the central and peripheral nervous systems.

DR. E. D. FISHER referred to Charcot's work on polyneuritis, and agreed with the previous speakers. He thought the combination more frequent than was supposed. He differed from Dr. Dana, but believed the changes in the cord may exist, but are not discoverable by our present means of examination.

ASTASIA-ABASIA.

DR. KNAPP read a paper on this subject. See page 673.

DR. G. M. HAMMOND thought that the way to show that the affection was not organic was that the patient could perform walking movements while recumbent. His case had not improved under various known methods of treatment. The only remedy he found of efficacy was bicycle riding, and his patient can now ride a bicycle. He considers the affection as one of the manifestations of hysteria.

DR. WALTON looked upon it as analogous to hysterical aphonia, etc. If not identical it is allied to it. He would not lay so much stress on the absence of stigmata of hysteria as Dr. Knapp. He had observed a case, and thought the prognosis no different from that of hysteria.

DR. DANA wished to corroborate Dr. Knapp's suspicion of his case being one of paralysis agitans. He had a patient with abasia who was a manifest case of paralysis

agitans. There was the peculiar gait and rigidity, and he was frequently obliged to stop suddenly while walking.

In paralysis agitans cases there is, however, no astasia. They are always able to stand.

DR. HUGHES said that older writers like Weir Mitchell and Charcot described these cases as hysteria. It has been left to modern neurology to show that hysteria may co-exist with organic disease. Blocq had found these cases in connection with the rheumatic condition. He thought hypnotism might prove of aid in diagnosis.

DR. BULLARD had a case of typical astasia-abasia without any other hysterical manifestations.

DR. KNAPP, in closing the discussion said, that although there was some muscular weakness, it was not commensurate with the difficulty in walking, and that all the movements of walking could be performed with good strength. Hence a condition of abasia was added to that of paralysis agitans.

THE PATHOLOGY OF HYSTERICAL ANÆSTHESIA, ILLUSTRATED BY TWO CASES SHOWING SOME UNUSUAL PHENOMENA.

DR. MORTON PRINCE, of Boston, read a paper on this subject. The peculiarity of these cases was, that notwithstanding the presence of deep anæsthesia it could be proved that the patient felt any impression given to the hand. Pinching and pricking the skin was not perceived, but when the subjects were hypnotized they could accurately describe the tests which had been applied to the anæsthetic parts, and of which they had not been conscious. This showed that the impression was felt but not perceived. The most probable explanation was that the middle sensory centres (of Hughlings Jackson) were normal, but that in hysterical anæsthesia there is an inhibition of the highest sensory centres where the impressions are co-ordinated with the other psychical states constituting consciousness.

DR. HENRY H. DONALDSON presented, as a candidate for membership, a paper entitled

ON THE THICKNESS AND STRUCTURE OF THE CEREBRAL CORTEX OF THE BLIND DEAF-MUTE. LAURA DEWEY BRIDGMAN.

In each cerebral hemisphere of nine normal persons (six males, three females) the thickness of the cortex was determined at fourteen localities. With these normals the

cortex of the Bridgman brain was compared. It appears that at every point the Bridgman cortex is thinner than that of normals. At certain localities the abundance and size of the nerve cells in the cortex was also studied. The results of the investigation may be summarized under three heads:

I. General.

1. The figures for the average thickness of the normal cortex, as determined by various investigators, are discordant, therefore no general statement of this average thickness can be made. My own results most closely agree with those of Jensen.

2. Persons with an acquired defect of the encephalon various forms of mental disease etc. have a thinner cortex than normal persons.

3. Females have a slightly thinner cortex than males. Difference about one per cent.

4. The cortex of the right hemisphere is from two to four per cent. thinner than that of the left.

II. Special.

The comparison of the Bridgman cortex with the normal.

1. The cortex of Laura Bridgman was abnormally thin.

2. The cortex of the right hemisphere was decidedly thinner than that of the left. Specially associated in this case with the defective development of the visual area on the right side.

3. The thinning in the motor areas was not so well marked as in the areas for the special senses.

4. Compared with the rest of the cortex, that for motor speech was not thin.

5. The cortex in dorso-caudal portion of the area for dermal sensations *gyrus fornicatus* was well developed.

6. Cortex of the auditory areas on both sides and the visual area on the right side, are all very thin. Visual area on the left side was not thin. This condition is associated with the persistence of some vision in the right eye for six years after vision was completely lost in the left.

7. In the area for taste and smell the cortex is thin. This is associated with the generally undeveloped state of the temporal lobe rather than with the deficiency, which was by no means complete, in the senses there represented.

III. Histological.

1. The cortex of Laura Bridgman contained at all points an abnormally small number of large nerve cells, *i. e.*, cells 12 μ or more in transverse basal diameter.

2. There were fewer nerve cells in the cortex of the right than in that of the left hemisphere.

3. The relative deficiency of nerve cells is not so well marked in the motor as in the sensory areas.

4. In the centre for motor speech the number of nerve cells is abnormally small.

5. The number of nerve cells is very small in the auditory area on both sides and in the visual area on the right side.

6. There is some diminution in the number of cells in the areas for taste and smell.

7. The smallest number of cells is associated with the smallest size of the largest cells.

The persistence of vision, though in a very defective form, is still of great importance to the full development of the visual cortex as shown by the influence of the remnant of vision in the right eye or the development of the left visual area.

MUSCULAR ATROPHY FOLLOWING TRAUMATIC ARTHRITIS.

There is still much obscurity on the cause of this atrophy. Some authors think it due to local alteration in the muscles, while Brown-Séquard and Charcot regard the diseased joint as having a reflex action upon the trophic centres of the spinal cord, the dynamic alteration of the ganglion cells leading to an atrophy of the corresponding muscles. Raymond has undertaken a series of experiments in order to settle this question. He injected nitrate of silver into the knee-joints of rabbits, producing a purulent inflammation of the joint, with consecutive transient functional paralysis of the entire limb. The cutaneous and patellar reflexes were augmented, faradic excitability of the muscles was increased and atrophy more or less precocious, but always observable, was present. In three weeks the atrophic muscles had lost fifteen per cent. of their weight. Examination revealed but slight visible changes. The writer considers the condition as one of interfibrillary atrophy. If, in the animals experimented on, the posterior roots of the sacral nerves were severed, then, in spite of the presence of inflammation of the joint, there was no secondary atrophy. If cut on one side, atrophy appeared on that side. Hence, the writer thinks himself justified in concluding that this form of atrophy is due to a reflex influence of the trophic centres in the cord.—(*Gazzetta degli Ospitali*, No. 23, '91.) F. H. P.

Asylum Notes.

By MARGARET A. CLEAVES, M.D.

ORDER OF NEW YORK LUNACY COMMISSION.

At a recent meeting of the New York State Commission in Lunacy, the following order, confirming the action of the conference of superintendents of New York hospitals and the Lunacy Commission, reported in the last number of this JOURNAL was made:

I. That on and after October 1, 1891, no private or pay patient at any State hospital be permitted to occupy more than one room for his or her personal use or behoof, or to command the exclusive services of an attendant; and, thereafter there shall be no distinction permitted between public and private or pay patients as to the care and accommodations furnished them.

II. That whenever the managers or trustees shall determine that vacancies exist, private or pay patients may be admitted by them without further restriction, at a rate of compensation not to exceed ten dollars per week, preference to be given in all cases to patients of small or ordinary means.

III. That this order, unless specially so directed, shall not be held to require the removal of the private or pay patients in custody October 1, 1891.

IV. That this order shall take effect October 1, 1891, and on said date the order relating to private or pay patients entered September 2, 1890, shall cease and be of no effect.

The above order is of so wise and judicious a nature as to merit only our warmest commendation.

ASYLUM NURSES' REPORTS.

Through the courtesy of Dr. Tomlinson we have before us the blank reports provided for the use of the nurses at the Friends' Asylum, Frankford, Pa.

When kept by intelligent and especially trained nurses they cannot fail to be of great value to the physician, giving him a comprehensive knowledge of the details of his patient's daily life, which is a *sine qua non* in asylum work.

The information obtained in them is supplemented by the physician's personal observation, transferred from his note-book to the blank at the end of each week. There is also added any information gleaned from the night nurse's report.

A small blank, for a menstrual record, offers an opportunity for obtaining interesting data as to this function in insane women.

The three reports are filed away until the end of the month, when the information they contain is transferred to the case-book, either in detail or condensed as the information is of special clinical and scientific value or not.

The asylum nurse should keep as faithful a record of her patient's condition as the private trained nurse of the day is required to do, and any aid to that end is desirable.

ASSOCIATION OF GERMAN ALIENISTS, AND BILL AGAINST DRUNKENNESS.

At the meeting of the Association of German alienists, held in Weimar, September 18 and 19, 1891, there was unanimously adopted a resolution welcoming the introduction of a bill by the Government against drunkenness as such.

The resolution, which was adopted with great satisfaction, demands the confinement of habitual drunkards in hospitals under medical management and State supervision.

One clause of the bill which has, we believe, become a law, provides that drinks shall not be sold before eight o'clock on the morning, and never to known drunkards. As the mental physician, perhaps more than any other, is better placed for a full realization of the disastrous effects of habitual intemperance upon the integrity of brain and nerve, both in the *habitué* and his descendants, the action of the Association of German Alienists cannot be without a decided influence for good.

POST-GRADUATE STUDY OF INSANITY.

At the recent meeting of the British Medical Association, Dr. Francis Walmsley called the attention of the members of the Psychological Section to the desirable-

ness of throwing open asylum doors for the post-graduate study of insanity to the members of the medical profession.

"The rich and valuable stores of information which they contain," says Dr. Walmsley, "should be rendered available to the whole body of the profession." The need of so practical knowledge of insanity as would be thus gained is daily felt not alone in England, but in this country as well. Our asylums, scattered all over the country, are vast storehouses of yet undeveloped pathology, and to the hard, over-worked hospital physicians, we can but believe that such assistance as would be thus rendered would be most welcome, aside from the good, accruing to the individual members of the profession so engaged.

"In this way an interest not now felt would be awakened in the minds of the general practitioner.

"The time for asylums to be medical worlds of their own, a thing apart from the general profession, has passed, and they should be urged to meet this want and to give the profession an opportunity of furthering their knowledge of so important a branch of medical science.

"We believe that such a course must necessarily lead to that *entente cordiale* between asylum physicians and the mass of the profession so much to be desired, and that it would, as Dr. Walmsley says, result in "an interchange of views between the profession at large and the permanent asylum staff which would be for the benefit of both—the good of the patients and profit to the whole community"

APPOINTMENTS.

Dr. Hugh B. Meredith, for thirteen years past assistant physician in the State Hospital for the Insane at Danville, Penna., has been elected to the superintendency of that institution, so recently made vacant by the death of Dr. Schultz. It gives us great pleasure to record this appointment, which Dr. Meredith has so ably won by his long, faithful and efficient service as assistant physician.

HOSPITAL TREATMENT FOR THE INSANE.

Dr. A. B. Richardson, late superintendent of the State Asylum for the Insane at Athens, Ohio, in a paper read

at the Cincinnati Academy of Medicine, makes a strong plea for the hospital treatment of the insane. His views are the results of twelve years' experience. He very briefly and justly reviews the past and present status of the work of insane hospitals, and concludes that it is not strange when the alienist is chief executive, architect, steward, chief caterer and physician, and when expected to have sufficient expert knowledge to act as consultant in every form of disorder among his patients, be it in the domain of psychiatry, neurology, general medicine, surgery, gynecology, otology or ophthalmology, that there is not much time left for original research and that he becomes less and less a physician, until he may boast that not one per cent. of his patients require any medical treatment.

It is surprising under these circumstances that any advance is made in the pathology of mental disease. Pointing out the defects in the present system, he believes that progress is to be made by the separation of curable and incurable cases, and by the placing the former in a hospital constructed in every particular in accordance with the *hospital idea*, not the asylum, and with a capacity of not to exceed two hundred beds, a lesser number being better.

The equipment of such an institution should be marked by thoroughness of detail. An experienced resident medical staff should be provided in sufficient numbers to permit the most thorough examination and supervision of each patient. Records should be complete and satisfactorily kept. Daily observations should be made and histories pursued either to recovery and, as far as possible, through future years or to autopsy. Experts should be employed in pathological and microscopical work. Not only should the medical staff be trained, but the nurses as well. Every one in charge of an insane patient should have some kind of intelligent conception of the nature of insanity and its management. Co-operating with the resident staff should be a consulting staff in such special departments as would be advantageous.

Such a hospital should be used for educational purposes. Clinical instruction could be given in all forms of mental disease, to all who would seek it, by a resident staff, without injury to any patient.

Common sense, he says, should be used in the admission of students to the wards, and proper selection of cases should be made for illustrations.

The need of this knowledge upon the part of the general practitioner is imperative. "The daily record of suicides and frightful sacrifice of innocent lives" attest his inability to appreciate the significance of the early symptoms of melancholia and the dangers attendant upon its incipient stage; while the record of squandered fortunes and ruined homes are equally significant of his inability to "read aright the signs of approaching paresis."

There is little doubt that Dr. Richardson but voices the opinions held by the mass of progressive alienists, as well as the general profession. Under the old régime good, honest work has been done, progress has been made, despite every obstacle, but the time has come when more and better things are demanded, and to that end hospitals for the curable insane should be established and our asylums opened for the post-graduate study of insanity.

THE PATHOLOGY OF SUDDEN DEATH IN MANIA.

Every asylum physician will recall the condition of collapse which suddenly occurs in some cases of mania and which under the causes of death are recorded as "exhaustion from mania." In fact, every asylum report will be found to contain cases so recorded, which is, after all, a very indefinite way of putting it, and is very apt to be a screen in the absence of more definite knowledge.

The following conclusions concerning these cases are reached by Dr. James R. Whitwell, of the West Ridling Asylum, Menston, England, and reported in the "Journal of Mental Science," and are based upon clinical cases with microscopic examinations. Putting aside coarse hæmorrhages, he says, one may reasonably expect to find some pulmonary or cardiac condition of sufficient magnitude and gravity to permit of its selection as the actual cause of death. Of the cardiac conditions, either organic valvular disease or some muscular incompetence, associated, perhaps, with a fatty change in the organ, is most common; of the pulmonary conditions, probably congestion and œdema of the lungs and pneumonia are most frequent.

Pulmonary œdema may occur in these cases as a result of at least two conditions, firstly, as a sequential pulmonary lesion to a failure of the heart, a frequent cause of pulmonary œdema apart from mental cases, and secondly, it may occur as a result of pulmonary embolism not necessarily associated with any abnormality of the heart.

Pneumonia may be associated with acute mania in vari-

ous ways: 1. It may be that the pneumonia is a causative or concomitant condition which produces death, either by extensive area involved or by cardiac or other complications. 2. It may be that the pneumonia has occurred as an intercurrent disease, in the same manner that it may attack a sane and otherwise healthy individual.

There seems, however, some reason to believe that the administration of chloral in these cases of acute mania not only frequently tends to assist in the production of the pneumonia on account of its effect on bodily heat, but further, by its cardiac action, may assist in interfering with an otherwise not specially unfavorable prognosis. 3. That it may be that the pneumonia has occurred as an inflammatory condition of the lung, superadded to the condition of fat embolism.

It is to the pulmonary condition to which attention is especially called and two cases are reported, one of acute pulmonary œdema, occurring in a case of long continued mania, associated with the presence of a fat emboli in the lung; the other of fat embolism with pneumonia.

At the necropsy of the first case the right lung weighed 545 and the left 1,160 grammes; the latter was intensely œdematous, congested from apex to base and small pieces taken at random, showed on microscopic examination after treatment with osmic acid numerous fat emboli scattered throughout the sections, both in the capillary vessels and in the smaller branches of the pulmonary artery. Both heart and liver showed some patches of fatty degeneration. This patient, a male, aged 34, had been continuously noisy, restless, talking, singing, shouting and gesticulating. This condition of mania had been continuous for four months and a half with the exception of a lucid day or two: in the second month he gained a little flesh, but both before and subsequently, lost flesh.

In the midst of one of his nightly outbursts, at 2 A.M., April 20th, he suddenly became quiet and the night attendant found him lying on his back with a pale and somewhat dusky complexion and evidently seriously ill. Dr. Whitwell found him unconscious, collapsed, and distinctly cyanotic; pulse 90; of fair tension and of sufficiently good volume to render the idea of syncope at least doubtful. Sphygmographic tracing showed a well marked predicrotic wave, and some irregularity in force and rhythm. Respiration regular, labored and but slightly increased in frequency; numerous moist crepitations were heard in the

chest, especially at the left base. He gradually grew worse and died on the evening of the same day.

The other, a male, aged 25, second attack, had during a nine months' residence in the hospital, been dull, excited and finally acutely maniacal. The latter condition lasted between two and three months, during which he lost flesh steadily. At 2 A.M., November 8th, he suddenly in the midst of his excitement, fell backwards, his face became cyanosed, he had great dyspnœa, pulse irregular, but not of good tension. This condition increased steadily until death, two hours after the commencement of the seizure. Post-mortem: œdema of the base and posteriorly of left lung; emphysema anteriorly. Right lung, throughout middle and lower tubes showed a large number of wedge-shaped embolic areas, with their base at the surface of the lung, varying in size from an inch square downwards and besides there was considerable œdema of the greater part of the lung. In the upper lobe there were a few infarcts, but the most noticeable feature here was a large patch of pneumonia in the grey hepatization stage, which abutted against and emerged into some of the embolic areas, which seemed to be an inflammatory condition superadded to a previous attack of embolism and which because of its relatively small area gave rise to so few symptoms. Microscopic examination of portions of the lung removed from immediate neighborhood of infarcts, showed very numerous fat emboli of various sizes. There was commencing cirrhotic changes in both kidneys and considerable hepatic venous congestion. No signs of any bodily injury were found in either of these cases. Dr. Whitwell summarizes as follows:

1. A not unfrequent cause of sudden collapse which may or may not result in death in cases of mania is fat embolism of the lung.

2. That it is to be suggested or diagnosed during life by the presence of the following points: I. Sudden collapse, with coldness of the extremities, etc. II. Dusky pallor of face, sometimes marked cyanosis. III. Some dyspnœa; respiration may be shallow, sighing or labored. IV. Pulse of fair volume frequently, usually irregular. V. Stethoscopic examination revealing pulmonary œdema or secondary embolic pneumonia.

3. That it is to be suspected after death by: I. The observation of intense local œdema of one or both lungs. II. The occurrence of actual infarcts in the lungs. III. The presence of localized pneumonia, which may or may not be associated with infarcts.

4. That the actual source of the fat is not at present known, but

5. That fat embolism of the lung can occur in these cases without any discoverable injury to either bone or subcutaneous tissue.

6. That it may possibly be due to a change in the blood, brought about by the long-continued maniacal excitement.

PROGRESS IN PSYCHIATRY IN ITALY.

At the meeting of the Medico-Psychological Congress recently convened in Milan, the President Senator, Dr. Verga, referred in his address with commendable pride to the progress made in mental medicine in Italy since 1873. When the Società Freniatria Italiana met in Rome, September 27th, 1873, there was no classification of mental diseases available for the statistician, nor any census of insane hospitals. Neither were there any laws for the regulation of asylums, nor for the safeguards of the insane citizen.

By September of 1873, this society had convened a medico-psychological congress, the first in Italy, at Imola. There a classification of mental diseases and an adequate census of the insane were announced. A classification, which Dr. Verga says was alike admirable for thoroughness, clearness and brevity, while the census exhibited proportion of insane to general population, not only according to sex, age, civil status, culture, religion, social condition and morals, but also according to principal forms of mental disease, a census which is yet lacking not only in every European state, but, we believe, in this country as well.

Further legislation for the government of the manicomio, under the auspices of the Società Freniatria Italiana, is in view.

But as is well known, progress has not been confined to the legislative aspect of the question, but includes the pathological as well. Not a year has passed without contributions to the science of mental medicine.

"Young physicians," says Dr. Verga, "barely graduated, threw themselves with ardor into experimental psychology, and the measure of time in psychological acts, whether elementary or complex, and that of the temperature during the play of the emotions, were gauged with scientific exactitude! From the confines of anthropology they launched into the tranquil regions of civil law, and their *audacie unmanitarie* won applause and imitation even

among foreigners. No vital phenomenon, conscious or unconscious, however strange or obscure, was left without illustration. . . . No expedient of diagnosis or cure, external or internal, medical or surgical, proposed against mental alienation or against neurosis of any kind, but was brought to the test of precise experimentation. Periodical reports, embodying work of the kind indicated, were issued by some of the hospitals, while monographs and publications devoted to the subject were rapidly placed before the profession.

In nearly all the seats of learning throughout Italy, medico-psychology, which had before no place in medical education, is now represented by special chairs."

But the eloquent Senator is not content in eulogizing the work which has been done, and which denotes a marvellous mental activity and true progressive, as well as professional spirit, but reminded the Congress of what they yet had to do. "Inaccessible," he says, "is the supreme height of every science. But to think of the summit of psychiatry! the loftiest summit in all science, a summit ever covered with clouds, dark and awe-inspiring."

The papers presented at the recent meetings were of the usual high order. Especially mentioned were those of Prof. Vessalae on "Pellagra as a Cause of General Paralysis," Dr. Martinotti's, entitled "Alcune Osservazioni Istopatologiche Capsule Surrenali in caso di Paralisi Progressiva," Dr. Lombroso's, on "Sulla Sensibilità Nelle Donne Normali," interesting from its bearing on the fitness claimed in some quarters, for women to undertake the duties of man, and that of Dr. Macabranj, entitled "Ricerche negli Antropoidi di Alcuni Cavalieri Craniologici." The latter was regarded as one of the most important papers of the session, forming as it does a valuable contribution to the comparative physiology of the brain and its functions. The next meeting of the Congress will be held in Rome under the presidency of Dr. Biffi.

Following the custom of the Italian Medical Congresses, a series of subjects have been given to experts on the same who are to examine, and report upon them at the first sittings.

IN MEMORIAM.

It is with profound regret that we record the death of Dr. Solomon S. Schultz, Sup't of the State Hospital for the Insane at Danville, Pa. Dr. Schultz died of heart failure September 27, 1891, in the sixty-first year of his age.

He was born July 5, 1831, in Berks Co., Pa., where he also received his early education. Entering Princeton Col-

lege, he graduated in 1852, and then began the study of medicine with Dr. Daniel S. Detweiler, of Montgomery County. After careful preparation he entered the University of Pennsylvania, from which he graduated in 1856.

He began private practice in Allentown, Pa., but was soon called to the position of assistant physician at the State Hospital for the Insane, Harrisburg.

Leaving there in 1861, he traveled abroad, visiting hospitals and public institutions in Germany, England and France, and studying their methods. At the coming on of our civil war, he hastened home and entered the army, serving as surgeon with the Seventy-fifth and Twenty-third Regiments Pennsylvania Volunteers, and as executive officer and surgeon in charge of general hospitals at Harrisburg, Pa., Covington, Ky., Madison, Ind., and Columbus, Ohio.

Here he resigned at the close of the war in 1865, and returning to Harrisburg, entered upon private practice. In 1868 he was appointed by the Commissioners to the Superintendency of the State Asylum for the Insane at Danville, which position he held at the time of his death, a period of twenty-three years.

He was possessed of great executive ability and was very successful in his management of the hospital.

His illness, which was of short duration, was due to a severe cold, from which he could not seem to rally. His untimely death is thought to have been hastened by anxiety of mind and worry induced by the malign reports circulated during the past few months concerning his management of the hospital. These reports had their origin, we believe, in the statements of Anna Dickinson at the time of her leaving Danville. Coming from such a source and with the wide publicity given them by the press, it is easy to understand how they must have troubled a sensitive, conscientious man like Dr. Schultz and so depressed his vital force as to render him an easy prey to disease.

That a life spent for the welfare of the most unfortunate class of humanity should be so darkened at its end, is sad indeed. To his patients he was not only the good physician, but a kind and sympathetic friend as well.

To him the hospital at Danville owes all of its success, as his has been the guiding and controlling hand from its opening. He will be greatly missed there as well as throughout the State and among the profession. He was an active member of the Pennsylvania State Medical Society and of the Association of American Superintendents. He leaves a wife and two sons to mourn his loss.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

SOME SUGGESTIONS CONCERNING THE ETIOLOGY OF GENERAL PARALYSIS.¹

BY H. A. TOMLINSON, M.D.,

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THE subject of General Paralysis of the insane is somewhat hackneyed, and the ground which it covers seems to have been pretty thoroughly cultivated; still there is one point from which it has not so frequently been approached as from the others, and that is, its probable etiology. It is this part of the subject I wish to study, and I will use, to illustrate my argument, three cases—two of them illustrating antipodal forms of the manifestations of the disease, the other occupying a middle ground between the two. I will also approach the subject from a physiological and psychological, rather than from the usual pathological point of view, partly because less has been said from this standpoint, but principally because it seems to me to offer the means of obtaining a clearer understanding of the causation and manifestations of this most intricate disease.

¹ Presented to the American Neurological Association at Washington, September 22d, 23d, 24th, 1891.

It is very generally understood and believed by students of the subject, that the developed foetus contains a brain mass having a definite potentiality and endowed with certain hereditary tendencies ; and that the individual's mental life is the sum of the products resulting from the influence of experience upon this potentiality and of environment on the inherited tendencies. In the developed individual, the nervous system performs two functions—that of somatic life and that of mental life. And just as the functioning of the motor centres and the general nervous system is a manifestation of motion transmitted from cell to cell, from periphery to centre and back again, so, probably, is the functioning of that part of the brain which presides over mental action. Their inter-dependence and their dependence on the other functions which they direct and control, being analogous to that existing in any other organ. Again although this definite mode of reception, comparison and relation of external and internal impressions which we call mental action, is not a tangible secretion, yet it must be its analogue, especially as it involves activity of special functioning cells, with resulting tissue change, which increases or decreases in a direct ratio with its activity. That this function of the brain is a separate one, carried on in a great measure independently of the general manifestations of nervous energy, is shown by the fact that the gravest disturbances of this function may occur, or even its entire extinction, without materially disturbing the vegetative existence of the individual. There is an inter-dependence however, which is essential to the proper performance of both functions. The impressions (the relation and storing of which, with the concomitant direction of vital energy which form the material with which the psychic function has to deal), are brought to it through the channels of the general nervous system for elaboration into thought and ideas, just as the ore, limestone and coke are brought to the cupola of the furnace from their different sources to be elaborated by fusion into the product—iron. It follows that the proper performance of the functions of the brain de-

pend upon the relative perfection of its parts, and their adaptability to the demands to be made upon them.

In the beginning of this discussion, the question arises, why should one of two individuals, each subject to the same conditions, suffer from paresis, and the other not? The answer to this would seem to be that in the one some hereditary or acquired condition existed which predisposed to a degenerative brain disease. This is my belief, and I therefore start with the statement that the individual suffering from general paralysis has, either from hereditary or congenital causes, an imperfect cerebral organization. General paralysis is premature irregular dissolution, during the progress of which the degeneration, instead of following the regular order as manifested in senility, is marked by explosive and rapid changes, both mental and physical—irregular in their order of manifestation and perverted in their character, interrupted by stages of remission, during which the individual may return to an apparently normal condition.

It is unnecessary to say anything in detail of the various hereditary, congenital or acquired conditions which may cause arrest and irregularity of cerebral development, or which may occur during early life to impair its growth. These causes are numerous and act in various ways, producing results which may vary from the mild forms of disturbance manifested in hysteria, through various grades down to idiocy. Those we have to deal with in this discussion, are the less marked forms which grade up from paranoia. An individual with this limited degree of irregular mental development, may be and is as a rule, able to perform all the duties of life, even the most exacting, without any manifestation of mental or physical disturbance, but if a series or combination of severe disturbances occur, they may impair general nutrition to such an extent that degenerative changes begin, and, if the strain is kept up, continue until they get beyond the point where nutrition can overtake them, and dissolution progresses, its rapidity being governed by the age of the individual and the degree of integrity in the different parts of the organism.

These same degenerative changes can no doubt be set up by any continuous and progressively active toxic agent affecting the nervous system directly, or through the organism generally. Such as syphilis or alcohol. However, to my mind, it still remains an open question as to whether the excesses which result in chronic alcoholism and syphilis are not dependent on the degeneration, rather than the cause of it. If the history of the case is carefully gone into, I think that in most instances symptoms of paresis will be found to have existed before the development of alcoholic excess or the outbreak of syphilis. The form in which this degeneration will make its appearance, is governed by two factors—the nature of the cause and the life history of the individual. When the exciting cause is mental strain, and the predisposing cause prolonged mental over-activity, the changes in the individual to first become apparent will be mental. But if the predisposing and exciting causes are physical, then the first change apparent will be physical. It is well to bear in mind, however, that the first changes in the character or physical well-being are often not noticed or recognized, because the individual's life history is not, nor cannot be, as carefully scrutinized as it should be. It is seldom, too, that all of the manifestations of paresis are typical, especially in the first and second stages. Indeed, I have seen one case that was not recognized until an apoplectiform seizure ushered in the third stage. Again, age has its influence. Physical degeneration is apt to be most marked in those under or in middle life, and mental degeneration in those past it. This is to be explained by the fact that a young man is more vigorous mentally, and that a man who has passed middle life is not so liable to encounter the conditions which give rise to the physical breakdown in the disease. The first case I have to describe illustrates the form in which physical symptoms predominate, and it also has a bearing on the question, as to whether syphilis and alcoholism are causes or the excesses which give rise to them the result of the disease.

Mr. X., aged forty-one years, single, and a grocer by occupation, was admitted as a patient March 31st, 1890.

Parents dead. Father died at the age of eighty-three, of urethral fever; mother at fifty years of cancer. Three maternal first cousins have been insane. One half brother, although in fairly good health and a successful business man, has a systematised hypochondriacal delusion, which has persisted for some years. A half sister has been markedly neurotic, and her husband, a second cousin, committed suicide while suffering from nervous depression. A daughter of this sister has been hysterical for some years, and was recently on the borderland of insanity for some time. Another half sister, by another wife, and born after the father was sixty years old, is neurotic, with intense egotism and some slight intellectual imperfection, showing itself in the form of inertia and absence of any ambition. The only brother of the patient, also the only other child by the same mother, is vigorous both mentally and physically. His paternal grandfather was a continuous and considerable consumer of alcohol all his life. His maternal grandparents were healthy, vigorous New England people.

Mr. X. displayed no peculiarities during childhood and young manhood, except morbid sensitiveness to criticism and a tendency to seclude himself if offended or disappointed. He was very successful in business as a young man, and very much liked. He went to Chicago a year or more before the fire, and went into a business which brought him considerable prosperity. During the great fire, however, his business was entirely destroyed, and he became very poor. He disappeared from the knowledge of his family for nearly a year, and when found, was penniless and very much used up. He never would tell what had happened during this year, nor what he had done. His relatives finally found him, brought him back to New England and found employment for him. In 1878 he was under treatment at Binghamton for the alcohol habit, and is believed to have used alcohol in moderation, until recently he has shown a tendency toward excess. There is an apocryphal history of his having contracted syphilis in 1872, but careful scrutiny fails to show any sign of sore on his penis, nor does the history he gives of the trouble bear out his statements, and he has never spoken of it until recently to anyone. For about two years he has been known to indulge in sexual excesses, and for nearly the same length of time he has suffered from nocturnal incontinence of urine, and recently, from imperfect control of the vesical sphincter during the day. In July, 1889, he had an attack of numbness in the left side, and is known to have had ten or more

similar attacks since, resulting in a decided paresis of that side. About the same time he began to have difficulty in articulation. This difficulty has been apparent at all times, but is more noticeable if he is fatigued or excited. Within the last six months he has had trouble in letter writing—his spelling, although never perfect, is much worse than ever before, and often he omits whole words, and parts of words from several sentences in succession, destroying completely the sense of entire paragraphs. There is a letter preserved which was written by him about this time, dated a month previous to the time it was sent, which is an incongruous jumble of sentences. The penmanship of this composition varies a great deal. Some parts of it are written in a fair, round hand, others in a dragging scrawl, while some words are begun in a round hand and end in a confused blur. The letter is not signed. The same difficulty shows itself in his accounts, he is unable to add a considerable column of figures, and he often drops an important item. Within three months a confusion of ideas or inability to think clearly has been observed. He has lost his way in Boston, where he is perfectly at home, spending hours in a fruitless effort to find the railroad station. He has gotten out of a car in order to get into another train at a junction, gotten back into the same car, and gone on, under the impression that he had made the change. This failure of memory and attention have increased, so that his accounts of common circumstances related to him or experienced by him, often vary materially from the facts and change in a repetition of their relation. He had a fall December 1st, 1889, severely hurting his foot. The fall occurred during a paretic attack. His temper, never very well controlled, has been noted of late to be excited to extraordinary violence by trivial things. His violence has been of speech and manner only, and he has never threatened personal injury to anyone. His statements of time, dates and circumstances are often wholly unreliable.

The night before he was brought to the Institution, the family with whom he was staying found him sitting on the front steps with nothing on but a shirt, and that he had thrown his pantaloons into the street. His condition on admission was as follows: Body well nourished, appetite good, bolts his food, bowels constipated, urine negative, heart-action regular but weak, pulse 96, lungs not diseased, tongue œdematous and fissured and without coating, it is very tremulous on protrusion; speech hesitating and slow; the lingual consonants are pronounced with difficulty, and

most of the facial muscles are brought into play in talking. Pupils react to light; but there is commencing atrophic change in the retina. There is quantitative electrical change in the muscular system generally, and in the left leg especially. There is marked failure of memory and confusion of ideas. He is conspicuously self-conscious, irritable and suspicious. During the first month of his residence, his general condition improved somewhat, but he became very hypochondriacal, looking upon the various paræsthesiæ, of which he was conscious, as organic complaints in the parts. He had a slight apoplectiform attack in the early part of the month; during the latter part he developed modified delusions of grandeur concerning his own identity and his possessions. During the next month, he had two apoplectiform attacks, one of them accompanied with motor aphasia, lasting for an hour. His incontinence was worse, being present both day and night. His gait is becoming more ataxic and failure of memory is more marked. He will go to the closet and have a free movement from the bowels, but before he leaves the closet, will insist that his bowels have not been moved for a month. His gustatory sense is becoming perverted, and he covers his food with an excess of sugar. During the next month, he was in a condition of general exaltation, accompanied by explosive and boisterous mirth, varied with equally explosive and noisy anger, resulting from trifling occurrences. His physical condition remained the same. During the next two months, he had three paretic attacks, each one leaving the left side weaker, and his ataxia more marked. He also developed auditory hallucinations, hearing voices outside his room at night talking about him and ridiculing him. With the last paretic attack, there was ptosis of the left eye-lid, with anæsthesia, and absence to response to either electrical current on the left side. The incontinence of urine and delusion with regard to his bowels persisted. During these same months, there was steadily progressive physical failure and rapid mental reduction, with almost complete loss of memory of recent events and great confusion of thought. At the end of the period, he could neither get up nor down, dress nor undress himself, although he could walk after he was started in a straight line, but if he attempted to avoid any obstruction he could not control his movements, and fell to the floor if not prevented. A peculiarity of his condition at this time was the diurnal variation in his powers. In the morning he could articulate fairly well and write connected sentences, but his ability to do either became less and less

as the day went on, until in the evening he could express himself only after great effort, and could not write at all. At this time he had also temporary attacks of paresis of the vocal cords, when for a day or two at a time his voice would be very husky. At times there would be complete aphonia. A note at this period describes his condition. There has been marked mental reduction recently and the paresis is constantly increasing. He cannot carry out a continued train of thought, and in writing he is altogether incoherent and irrelevant. In the morning he can write fairly plainly and generally connected sentences, but as the day wears on he becomes more and more confused, and his paresis more marked, so that his writing is entirely illegible.

During the next two months his condition underwent no material change, except that he developed a fairly well-defined delusion that there was a man in his room who was impersonating him. He could both see and hear him, and insisted that this strange man put him out of his bed and was trying to steal his clothing. This delusion apparently had its origin in the fact of his seeing his own image as he wandered about his room at night. The delusion persisted for a long time, gradually merging into the idea of a dual personality, with whom he kept up an almost continuous conversation, asking questions and supplying answers. This idea only disappeared when the mental reduction had reached the degree necessary to abolish it. Two notes at intervals of a week describe his condition at the end of the next two months. Eats heartily, but in a careless and slovenly way, and bolts his food. He does not sleep well, and when awake is very much disturbed by the presence of an illusory individual in the room, whom he thinks is trying to displace him from the bed, and to appropriate his clothing. After losing a night's rest, he is more excited during the day, and keeps up the conversation with his imaginary companion, carrying on both sides of it himself. There has been no change in the motor paresis. He cannot get up nor down without help, although he can walk fairly well. A week later: He has not slept so well, and has been more disturbed by his dual personality. His double now tells him that he is going to die of starvation. The mirror had to be removed from his room to prevent his breaking it in his efforts to get at the person who was disturbing him. During the day, when not attracted by conversation with others, he is in constant communication with his double. The lingual and laryngeal paralysis is progressing, so that now he speaks only in a low monotone.

During the next two months, he progressed steadily downward, until in July, 1891, he became entirely demented and helpless. During this time there has been a continuous failure of the left side, until at the date of the last note, it is entirely paralyzed. It will be noted in this case, first, the decided hereditary predisposition to insanity; next, the marked prominence of the physical symptoms and the absence of intellectual perversion and of mental exaltation. In his ordinary relations to those around him, there was nothing conspicuous but his marked egotism, hypochondriasis and loss of memory. The physical changes were, however, at all times manifest and apparent. The question also arises as to the relation of alcoholism and supposed syphilis to the general paralysis. In referring to the history, it will be seen that the patient had been a successful young man and of good reputation until after he had met with great material losses—and that after he had lived for more than a year as a vagabond, he had been found a satisfactory employé, and while in the ordinary performance of his duties, had suddenly developed into a drunkard, requiring residence in a home for inebriates. Following this, he had passed through a period of ten years comparatively undisturbed and undergoing no strain either mental or physical. At the end of this time, for no apparent reason, he begins to use alcohol to excess, and to indulge in sexual excess also. And along with this is noticed increased irritability, loss of memory and attention, with some confusion locomotor disturbance, and a tendency to attacks of weakness on the left side. During his stay in the Institution, there has been a steady physical and mental failure, without any maniacal manifestations or very marked intellectual disturbance, excepting his hypochondriacal beliefs concerning himself, which he has held to tenaciously to the end.

To my way of thinking, the mental manifestations in this case were in proportion to the intellectual calibre of the individual, and were governed by the nature of his experiences. There being no marked intellectual development or special tendencies when the process of dissolution became sufficiently advanced for explosive discharges of nervous energy to take place, they were manifested only in the direction which the capacity and tendencies of the individual made possible, while the removal of the element of inhibition, due to the failure of the moral faculty, liberated the animal instincts, to be gratified without control.

The next case is the exact antithesis of the one just described in almost every particular, and is quite as typical of the predominance of the mental and abeyance of the physical manifestations of the disease. Unfortunately, a full and careful history of this case could not be obtained, and there is only a record of the later manifestations of the disease.

Mr. Y., aged seventy-five years, married, and has four children, is a retired merchant in easy circumstances. The history obtained is as follows : Mr. Y. was induced by his family to give up business about five years ago on account of failing health. It had been noticed by his sons that he was erratically inclined, and that his business habits had become unusual and peculiar. He had suffered for some years previous from what was called nervous dyspepsia, and to this his failing health was attributed. His mental vigor seemed to increase rather than to diminish. He became interested in the social reform movements of Felix Adler and other men of advanced views, and he also took an active interest in religious reform, and became a close student of the literature of the radical element in social and religious affairs. He also took up one after another hobbies, which he rode for awhile and then dropped. First it was horses, then dogs, and again poultry and cattle. He did not seem able to keep his attention fixed on any of these occupations for any length of time, and after the novelty wore off from each acquisition, he seemed to forget them for an interval of days, so that some member of the family had to watch that his pets received ordinary attention, and this had to be done clandestinely, as he always resented any offer of assistance. He became after a time subject to attacks of depression, and showed a tendency to seclude himself, and while in this condition he seemed to be abstracted from all consciousness of his surroundings. He continued in this condition with varying degrees of intensity until two weeks previous to his admission, when he became more excited and erratic. He now undertook to carry out a great many absurd and strange schemes, and became very violent when opposed. He could no longer be cared for at home, and was brought to the Institution.

On admission his physical condition was excellent. Pupils were contracted and immobile, tongue slightly tremulous on protrusion, no apparent involvement of muscles of the face, patellar reflex exaggerated. He is restless and excited, constantly moving about, and talking about

plans for the amelioration of the condition of young girls in large cities. He has expansive delusions and grandiose ideas concerning his personality and wealth. Is imperious and dictatorial, easily angered, and will not brook opposition. Appetite good and bowels moved regularly. Sleeps fairly well at night, but is constantly on the move during the day. During the first three days of his residence, he was continually occupied in efforts to get out of the Institution. He resented warmly the restraint he was under, and was constantly writing telegrams to the Mayor, Governor of the State, the President, and to all the prominent men in New York and Philadelphia, demanding that they come immediately and take him out. He attacked his attendant frequently, but could always be controlled by a judicious show of firmness. He insisted that everyone should obey him implicitly, because he was a man of great wealth and power. The next day his grandiose delusions had increased, and he made the following declamatory statement: "I have the grandest intellect in the word, and know everything. I can acquire any language in three weeks perfectly—my mind grasps the most intricate problems immediately. No one can comprehend me, and no one can compare with me!"

Three days later he is quieter, his condition being one of benignity. He disclaims any ill-feeling towards his friends or those around him; his mind is filled with schemes for the material advancement of his friends and companions in the ward, and he insists that he has been placed in the Institution by mistake, that his friends are not aware of his confinement. The following is copied from the envelopes of two letters sent by him at this time: "Mrs. R., two, three to fifty without the five; living there a long time, but the cry is coming, push along, better hearken. It is a loud cry, especially in New York." Another: "Mrs. R., 3035 and a naught; everybody knows the avenue; it's in New York, near 42d street, where the shops are getting very thick; good-bye quality, the poor are coming; don't laugh, shut up." His pupils are minutely contracted, and fail to react to light. There is marked tremor of the tongue, but no apparent difficulty in articulation. There is marked arterio-sclerosis, with pulse at 90 and incompressible. He announces the next day that he is the possessor of ten thousand millions of dollars, and that he is going to buy the Institution with a view of making of it a home for little girls brought from the city. His memory is failing rapidly. He eats heartily and insists that he is possessed of great

physical power. The next day he is full of his great schemes insists on going away, and is very violent when opposed. He says that the management of large affairs is as nothing to him. The following quotation from a letter written soon after his coming to the Institution, shows the degree of exaltation present. In speaking of the superintendent and physicians who examined him, he says: "Ignoramuses—all of them! what do they know about me, about science, common sense, about morality, about religion, about ethics, about sociology, about sycology, about political economy, about anything great and good, only the petty matters lying within. Not all of them can give the meaning of the words, the contracted boundaries of medicine and surgery, specialists ignorant of all else besides. Such men come to see whether I am insane or not, yes, insane! with the grand and good ideas and thoughts which come from the Infinite. Have they ever walked with God; (yes, some of them know him whom he has sent.) But the Infinite, the Infinite, life breathed into the universe, permeating throughout and into the innermost past. Infinite life never dying, have they ever cultivated their intellects, their hearts, even their bodies: no poor broken-down bodies gormandized full, heads and hearts empty, those are the men to examine into me, far, far happier than any one of them." The next day he is sending telegrams in every direction, urging his friends to come after him. He insists that he has bought the Institution, and that he has immense supplies of money to carry out his plan of starting a home for girls from the city. At the same time his ideas are growing more expansive, and this plan is to be but the nucleus of large operations in different parts of the country in which many people are to be employed at large wages and all the employes are to have homes there. The following copy of a letter, written at this time, will illustrate the increasing expansiveness and the progressive confusion of his ideas.

"I have been buying some property recently at very low prices, on which I shall make a very large sum of money. I think I am already very rich and will soon be embarrassed with riches apparently. I have bought one place and will put up a hotel on it, perhaps, and build many fine houses on it. I have bought Mrs. S. house just as it is, beautifully furnished, for you and Mr. C., and would like to have you come here and live, as long as you live in the greatest plenty. Mr. C. will not have to work at all, except for his pleasure, though I think he would be so much sought after

that he would find it difficult to withstand ; however, I shall have a superabundance, and you will have your carriages and horses and everything like a rich woman, as you really are, and a mighty good one at that. I will live with you most of the time, I expect ; you can begin. I have bought G's house and all the old houses in Irishtown, cheap as dirt, but I will tear them all down, and have rows of fine stores put up ; our own big lot I will divide up into streets and put villas up—it will be elegant. The streets will be paved, etc. Write to little Tom and tell him all of this. I send you \$50 to-day and will send you plenty more soon. I am in Philadelphia now on a piece of property that I expect to buy and will be detained here some time. I am going to buy this place, I am pretty certain, for I have plenty of money at command, and I expect I'll get it for \$100,000 or less. However, I will give \$200,000, and Mrs. P. would give me all of it. You must come on and help me, you can live on this grand farm with me, you can be mistress of this grand building, filled with beautiful well-clad, well-fed children. Oh, if I ain't a happy man, there never was one. Come quick, as you can leave your house in other hands to be kept up. I will send you the money to do it all, only come quickly to me by fast steamer. . . . I have all the money and wealth you will ever need. Rent your house and come ; you can have miles of hot-houses and millions of roses and chrisanthemums ; won't we be grand, tho' ! Wouldn't Dr. W. like to come, I could give him chief physician's place, I think, at a high salary . . . it would put him beyond want, high up above it all his life. . . . It is strange to me how things progress, and at times burst forth with a bound, as soon as one idea is accomplished another comes, and so on, and so on, and so on, when we penetrate and go through, and then, perhaps, another, so progress goes on all this life and all other lives in the future. I shall want a large corps of the best men England can produce, for this will be one of the finest Institutions in *time* as anywhere in the world. . . ."

Two weeks later, he is becoming more and more wrapped up in his exalted ideas, and rarely speaks to anyone—sometimes he is too full of his plans to eat. He thinks that his food is prepared by a French cook, and he constantly magnifies the quality of his food, speaking of each article of his dietary as if it was some exquisitely prepared composition, especially gotten up for him. His possessions are also growing greater, and now include all of England and Ireland. Along with this is an expansion of ideas for

the utilization of his purchases. From building an Institution for the care of homeless girls, he has risen to the formation of a new government and a reorganization of society, on the lines laid down by writers in the radical journals he has been reading. These ideas are, however, much elaborated by him. The two following extracts from his code of laws, will show what he hoped to do. "I will give \$100 reward for the name of any gentleman found or seen frequenting a house of ill-fame; I will give \$5 to every very poor man or woman in New York city." Finally his possessions came to include the whole of the continent of Africa, and later, the world.

During the next month, it is noted that his physical health has steadily failed and his excitement has grown more intense. His memory is entirely gone, and he is continuously and completely self-absorbed. In the early part of the month his ideas had so far expanded that he one morning announced, "I am God! I am the law! Everything is according to my will." Again, a few days later—"I am the supreme power; I am going to establish a new government. There shall be no poverty, no taxes, no evil things." About this time he wrote the following: "Announce to the world, to the whole world, that a new world has emerged from its hiding-place of love and mercy to all men, and will enter at once upon its glorious mission of peace and good-will to man, and of the highest honor and deepest love to the supreme one, who has inaugurated this grand blessing to mankind." Also this: "Cardinal Manning, I have been directed by the Supreme power, of which thou, too, art no doubt aware, to kindly and lovingly invite thee to come to me, to the supreme, that we, too, may so walk together on the earth as to bring honor, not shame, to the great name of the supremist." Then followed elaborate plans for the government of the new world, based as before, and then was put in a new language, called the new world language,—"*Do no yu du, so also now de work of my dear, dear Fader is done, he has blest me, he has wispered in my ear, well dun, gud an faithful gentleman, enter into de joys, etc., . . .*" Next he makes an announcement to the world, made up of language taken from the Old and New Testaments, and signs himself "The Supremist, Supreme Ruler of the New World as also of the old." One day he was a loving, beneficent ruler, the next an avenging deity, pronouncing curses and anathemas upon every one who came near him. One morning he announced, "I am God, I am the supreme power, and no one

is fit to talk to me or associate with me." Next day all this had disappeared, and he was boasting of his great muscular power, and wanted to spar with everyone, and before the day was over he announced himself a Second Samson. This was followed by an attack of depression, during which he cried a great deal and spent much time on his knees communicating with the Deity. He soon became exalted again, however, and made constant efforts to take off his clothing, saying that in the new world no one was allowed to wear clothing. During all this time he never spoke directly to anyone, nor would he answer any questions. He was entirely absorbed in his exaltation and seemed to have no consciousness of his surroundings. This abstraction constantly deepened as his religious excitement increased. Sexual perversion made its appearance, and he made efforts to masturbate and to practice pæderasty with other patients. After this he became very restless and excited, and had visual and auditory hallucinations, also vivid illusions. One night he tore his bed mattress to pieces, trying, as he said, to rescue the Empress of China, who was sewed up in it. Again he imagined his wife was in bed with him, and he would try to embrace her, and would make amorous proposals to her. Toward the latter part of the month, he had transient delusions, at one time imagining that everyone who came near him meant to kill him, and again he talked of suicide. Following this, came the idea that he was a great military genius, and he conducted battles both on land and sea. From his fragmentary exclamations, he evidently imagined himself Napoleon and Nelson combined. After this he had an attack of exhaustion, with muttering delirium, and picking at the bed clothes. During the next week he failed rapidly. The arterio-sclerosis increased greatly, having been present from the first. His radial arteries were very tortuous, forming almost a letter S between wrist and elbow. His pulse having kept at about 80 previously, now became more rapid, running up to 120. He occasionally had an involuntary stool, also passed his urine in bed. He at this time thought his room was haunted by dogs and cats, he struggling all night to get them out. During the day he was generally in a condition of ecstasy.

He failed rapidly during the next week, and died March 15, 1890. Three days before his death, he became stuporose, and the day before he died he had a right hemiplegia, but apparently without involvement of the facial muscles. No post-mortem was allowed.

It will be noted that in this case, until the patient's conduct became very much disturbed, nothing was observed as wrong with him, and yet he lived barely three months after admission. Another conspicuous point is the entire absence of physical failure or motor disturbance until a week before his death. There was no disturbance of speech, although there was a gradually developed difficulty in writing, so that toward the last his writing became a scrawl. A peculiarity of his graphic failure was that as it progressed the letters were made larger, and near the last, what he wrote was printed in true school-boy style. The history of this man's life, so far as it could be obtained, was not marked by any conspicuous episodes or active crises. He had beginning as a poor boy, acquired considerable business success. Without any history of severe illness during his life; he was known to have suffered from what was called nervous dyspepsia for several years previous to his final breakdown. After middle life he took up intellectual pursuits, which the exigencies of business had prevented his indulgence in before. He pursued his studies with enthusiasm, and was especially attracted toward religious and philanthropic subjects. In these direction he became radical and elaborated advanced ideas, which, however, there is no history of his attempting to carry out. His moral and uniform domestic life kept him from causes of degeneration usually present in others, and his mental breakdown seems to have resulted from the over-use of a brain unaccustomed to such exercise, after the period of active development had passed when general nutrition was impaired by an imperfect digestive function.

The next case is typical of the coincidence of mental and motor symptoms, and of their uniform progression. therefore occupies a middle ground between the other two.

Mr. Z., admitted as a patient May 15th, 1890, is thirty-eight years of age, and a lawyer by occupation. On admission he was found to be a muscular, well-developed man, and physical examination shows all his vital organs, except the stomach, to be in good condition. He suffers from indigestion most of the time, is irritable and suspicious, and

complains of being ill-used by his family and friends, also that he has lost the power to work. There is fibrillary tremor of the tongue on protrusion, with involvement of the muscles of expression, so that in ordinary conversation he appears to be on the point of bursting into tears. He has scanning speech and difficulty in articulating the labial consonants. Pupillary reaction is normal, but the pupils are very mobile and dilate widely under excitement. Reflexes negative.

History.—He was very much brighter as a boy than any of his brothers, and was in good physical health. He was never, however, on very good terms with his family, because he thought they did not appreciate his intellectual capacity, and he had a strong imperious will, ill-brooking restraint. After leaving college, he had a severe attack of diphtheria, which left him profoundly prostrated, and from the depressing effects of which he did not recover for more than a year. He studied law and began its practice successfully, and he also went into politics. His associations here led him into convivial habits, and he became addicted to alcohol. After a severe disappointment on account of his failure to be elected to an office for which he was a candidate, he became dissatisfied with his law practice and took up with an offer from a publishing firm to digest the laws of his native State. He worked very hard at this, beginning at 8. A. M. and working until 11 P. M., and this he kept up for eighteen months. He became dissatisfied after finishing this work, and very much incensed toward his publishers, because, as he said, they did not properly value his work. He left his native city and went under engagement to a western firm, with whom he could not get along either, always accusing them of cheating him and not properly appreciating his work. About three years ago a more marked change was noticed in his character. He began to show unusual irritability and a disposition to quarrel with those with whom he had business relations. He would also become violently angry from trivial causes, his self-consciousness was morbidly developed, and he was very egotistic. Since that time, all of these conditions have become more marked, he quarrels with his wife and relatives, and any opposition from them makes him violent and boisterous at times, and he uses threatening language toward his family, of whom he is constantly suspicious, thinking that everything they do for him is designed to interfere with his welfare. He thinks he is not understood or appreciated, and that his sufferings are due to his not being properly treated by his

family and those for whom he worked. There is no history of insanity in the family, but his father was noted as a morose and eccentric man, and a brother became insane in early life on account of an accident. During the last two years Mr. Z. has himself been conscious of a failing power to work, and he has resorted to alcohol, often to excess, to keep himself up and to drown his bitter feelings. He has also used tobacco immoderately. He has suffered from indigestion with flatulence and fugitive pains in his stomach, back and head. During the first month of his residence he was irritable, cynical and morose, alternately excited and depressed, railing at his family and his friends, criticising the stupidity of every one with whom he had been associated. During the year that followed, there was a gradually progressive mental and physical failure, marked by failure of memory and attention, with loss of physical power and growing paresis of facial muscles, so that all the muscles of expression were in exaggerated movement during conversation. He had attacks of explosive laughter and weeping with exacerbation of excitement. There were no hallucinations or delusions, but simply a failure of intellectual power with exaggerated self-consciousness and perverted moral faculty. He was constantly trying to excite sympathy for himself among patients and attendants, also any strangers whom he might meet. He applied to different lawyers and judges to institute proceedings for his discharge, and finally made application before the Committee on Lunacy for his discharge. When by himself he would talk over his grievances and disappointments, cursing his family and friends and the physicians of the house. He was a most miserable and unhappy man, but never violent or belligerent. He was constantly making efforts to secure the coöperation of newspapers and lawyers in exposing the mismanagement of institutions for the insane, yet at the same time he did not want to appear personally in the matter, but first wanted them to get him out, and then help him to do what he felt he no longer had the mental power to accomplish. His handwriting changed very much, the letters were not perfectly formed, and were made smaller : a letter, and sometimes two, would be omitted from a word, and the last letter end in a scrawl. Sometimes one or two words would be left out of a sentence, or would be transposed. Under the magnifying glass two specimens of his handwriting, representing the beginning and end of the year, showed a marked difference. In the first, the lines were firm and even, but in the last they were uneven and

wavy, and with intervals, so that in places they looked like a series of dashes. He now wrote and spoke very deliberately, and in writing would make a great many flourishes. Shortly afterward, with the assistance of a discharged attendant, he escaped from the Institution, and went to another State, where he is the inmate of a sanatorium, from which place he is sending out bulletins to newspapers, offices and courts of law, asking their coöperation in exposing the wickedness and mismanagement of institutions for the insane.

These three cases, from the standpoint of causation and mode of development, represent the most ordinary forms of general paralysis, and illustrate fairly the physio-psychological changes which seem, from my study of the subject, to be embodied in this form of insanity. In seeking for a standard by which to judge of an individual's sanity or insanity, we are forced to create an arbitrary, and in a measure, an ideal individual with whom we can compare all men, and judge of the existence and degree of insanity in them by the extent of their departure from this standard. This ideal individual can be defined most simply and definitely by Herbert Spencer's abbreviated definition of life, as an individual who can perfectly "adapt internal to external relations." Any deviation from this standard is literally insanity, although it is not recognized as such until the deviation becomes so marked as to become conspicuous on account of so faulty an adaptation of external relations as to materially interfere with the individual's welfare and his relations to those around him. The various forms which this deviation from the normal standard may take, will be governed, of course, by the degree of imperfection in the nervous organization in the individual and the influence of environment. That is, if the relative imperfections of structure exist only in certain definite directions, the faulty adaptation will be in those directions, and if the environment of the individual be such as to increase this faulty adaptation, it will be to that extent exaggerated. Considering then each primary form of insanity to represent some fault in brain structure or irregularity in the manifestations of its functional activity, either inherent or acquired, it

would seem logical to conclude that in general paralysis of the insane was included all other forms of mental disturbance, and that the variations in type which we see represented in different individuals, were dependent upon the conspicuousness of one or another form of perverted relational adaptability. What gives general paralysis its individuality is the progressive degeneration going on in the whole nervous system, hand in hand with the perverted manifestation of mental function. For it is not uncommon to find certain forms of degenerative insanity which manifest a great many mental symptoms of general paralysis, but none of the motor symptoms, and that finally lapse into terminal dementia, without showing any paralytic symptoms. Again, the physical disturbance in general paralysis may resemble that of any other form of primary insanity at some time during its progress, generally in the first or second stage.

With this statement of what is constituted in my conception of insanity, and its application to the phenomena of general paralysis, let us pass to the consideration of the proposition contained in the introduction to this paper, that is, that the degeneration in general paralysis probably always takes place in an irregularly developed brain, and that the influence of this imperfection of structure under the stimulus of a sufficient exciting cause, is the main factor in the inauguration of premature dissolution. In the consideration of brain degeneration, a clearer idea of the process can be obtained by studying the life-history of a single cell and then applying the result to the whole mass.

Bio-chemistry teaches us that all organic compounds are unstable, and that in the animal organism in functional cells the relative instability is much greater than in all others. Also that this instability increases with the activity with which the function is performed. Consequently we would expect to find, as we do, that the structure of the functional nerve cell is the most unstable of all organic compounds. It is then the corollary of this statement that the activity of the nerve cell depends upon the sensitiveness to stimuli resulting from this instability, and that its capacity for

continued function depends upon its ever-recurring reconstitution.

In an organism with nerve cells having a definite potentiality, this reconstitution will continue as long as the organism exists, but if, through some incompleteness or irregularity in the development of the cell, due to hereditary or acquired causes of imperfection, the reconstitution is not complete, the result will be a greater instability of the compounded elements of the cell, making it more easily broken up, or in physiological terms, increasing the cell's irritability. This increased rapidity of decomposition and reconstitution implies a greater amount of waste and need for increased quantities of nutriment, consequently an increase of all the other organic activities implied. Now, if from any cause the general organism is incapacitated for supplying the increased quantity of nutriment, there must necessarily be an imperfect reconstitution of the nerve cell, and a consequent reduction in type, with restriction of activity, which if continuous, finally brings about dissolution and destruction of function.

Applying this analysis to the changes which take place in general paralysis, they will be found to correspond with the process taking place in the nerve cell. The individual starting out in life with an imperfect nervous structure, and whose functional nerve cells possess a greater irritability than normal, on account of the imperfection, is greatly affected by a strain which might be borne by a normal individual without setting up any degenerative changes. These changes assume greater proportion on account of the increased irritability of the functional nerve cells, liberating an amount of potential energy in a short time, that in the ordinary individual or under normal conditions would occupy a long time in its liberation. The power of the cell to reconstitute itself is thus interfered with, through the exhaustion of vitality and consequent interference with nutrition, thus bringing about the reduction in type and diminution of activity in the cell, and consequently in the whole nervous mechanism. If this defective structure is general, such as might occur as a result of incompleteness

of brain development, or through the influence of some toxic agent interfering with general nutrition in an excessive degree, there would be produced the typical manifestations of general paralysis or premature explosive senility. But if this inherent irregularity of nervous structure is more excessive in one direction than in another, there will occur the various deviations from the average type that are so frequently encountered.

NEURASTHENIA AND ITS RELATIONS TO CHANGES OF THE GASTRO-ENTERIC TUBE.

Dr. Champagnac has published a monograph (Steinheil, Paris) upon this subject which is very extensive, and from a bibliographic and historic point of view this question is of real and unquestionable value. His conclusions are as follows :

1. The coincidence of dilatation of the stomach and prolapse of the right kidney and neurasthenic disturbances is absolutely incontestible.

2. One may, by directing one's treatment towards the dilated stomach, cure the nervous symptoms which accompany and follow it.

3. This treatment does not cause the dilatation to disappear, but prevents the autointoxication which is the cause of the neurasthenic symptoms.

4. Although the gastrectasia does not disappear entirely the patient ceases to be nervous.

5. In the pathogenesis of neurasthenic disturbances, we do not admit the theory of Glénard—enteroptosis—but that of Bouchard—the pathogenic importance of dilatation of the stomach.

6. We hold the nervous theory—Beard's—as insufficient and incapable of explaining the neurasthenic phenomena, even if they have preceded the dyspeptic symptoms.—(*Gazzetta degli Ospitali*, No. 25, 1891.)

F. H. P.

A STATISTICAL NOTE ON TWO HUNDRED AND THIRTY-FOUR CASES OF PARESIS, WITH SPECIAL REFERENCE TO ITS ETIOLOGY.¹

BY H. M. BANNISTER, M.D., KANKAKEE, ILL.

THE following is offered as a slight contribution to the statistical data that may serve for the elucidation of certain points in regard to the etiology of paretic dementia or general paralysis of the insane.

Since the first opening of the Illinois Eastern Hospital for the Insane, in 1879, there have been received, exclusive of certain cases of which the diagnosis is yet doubtful, two hundred and thirty-four cases of paresis, forming nearly five per cent. of the total number of patients admitted up to the present date.² Of these, 199 were males, and 35 were females, the relative proportions of the sexes being thus about 6 males to 1 female. The average age at admission was forty, and the extremes in this respect were twenty-five and fifty-eight years. There were 5 cases, 4 men and 1 woman over fifty years of age, in these cases the diagnosis was only made after careful examination and continued observation had excluded any other. The patients were of all races and nationalities represented in the institution except the Hungarian and Mongolian, and the native Anglo-Americans were in rather larger proportion among the paretics than in the total population of the asylum. All classes of occupations were also represented, mechanics, farmers, laborers, professional men, etc., but there was a decided predominance of individuals engaged in commercial pursuits, including transportation, over fifty per cent. of all those whose occupations could be ascertained being of this class. This was still more marked among the female paretics, seventy per

¹ Presented to the American Neurological Association, at Washington, September 22d, 23d, 24th, 1891.

² September, 1891.

cent. of whom were wives of men engaged in some commercial pursuit, including in this twenty per cent. of the whole number who were wives of railroad employéés or commercial travellers.

About three-fourths of all the paretics were or had been married, but the number of divorced or separated was unusually large and in the females amounted to one-fifth of the whole number. Only three of the female paretics were single, and one of these had been a mother. Two or three of the women might be considered as belonging to the disreputable classes.

As regards residence, about seventy per cent. of the whole number might be reckoned as coming from the urban as distinguished from the rural population, including in the latter all residents of towns or villages of less than three or four thousand inhabitants. Naturally, the largest proportion was furnished from the city of Chicago.

All the above points have only an indirect bearing on the question of the etiology of the disorder, although they furnish some indications. The statistics of assigned causes, as given in the papers of commitment cannot be considered as reliable in all respects as it rarely happens that all the facts are brought out in the jury trials that are compulsory in the State of Illinois. In the city of Chicago, which furnishes the great majority of the paretics that come to the hospital, the proceedings are apt to be very brief, and only such testimony as is necessary to establish the patient's insanity is required or given and the papers are made out accordingly. Nevertheless the assigned causes have a certain value as far as they are given at all, if it is only as a text for the discussion of the fuller data that can be obtained by close examination of the patients themselves and inquiry of their friends. The accompanying table gives the causes as stated in the verdicts—not in the exact term used, but grouped and condensed under general heads for the sake of brevity.

With the exception of those cases that were credited in the verdicts to "softening of the brain," "paralysis," "brain disease," etc., which I have grouped under the heading of

"Disease of Brain," and those credited to "heredity," the above table probably represents the facts as presented to the jury in regard to the exciting cause of the disorder. In about forty-one per cent. of all the cases no cause is given and taking the remaining fifty-nine per cent. by itself we find of this remainder sixty per cent. given as due to the three usually recognized principal causes of paresis, viz.: overwork, worry and intemperance. It is a little noticeable however, that worry and trouble seem to occur as a cause less frequently than overwork and ill health, which is, I think, rather contrary to the generally obtaining opinion as to the relative importance of these respective exciting

TABLE I.

ASSIGNED CAUSES.	MALES.	FEMALES.	TOTAL.
Bodily disease, overwork, etc.....	28	6	34
Mental strain, worry, domestic or financial trouble.	20	5	25
Excesses, alcoholic.....	25	1	26
" " narcotic.....	1		1
Traumatism.....	7	1	8
Exposure to cold.....	2		2
"Disease of Brain," etc.....	12	3	15
Menopause.....		5	5
Religious excitement.....	1		1
Syphilis.....	15	1	16
Sunstroke.....	2		2
Heredity.....	3		3
Unknown.....	83	13	96
Totals	199	35	234

causes of paresis. So far as these two heads are concerned, a careful examination of the histories of all the patients has not yielded any further data of any value to supplement the facts in the above table.

The case is somewhat different, however, with intemperance, which ranks second in point of numbers. It has always been the practice to obtain as full data as possible in regard to the personal habits of the patients in this respect, and facts as to drunken habits of a large number were obtained. Seventy-eight, all males but one, out of the

whole number of paretics treated, either were or had formerly been excessive in the use of alcoholic drinks, or were steady "moderate" drinkers, and less than a dozen were put down as abstainers or temperate. No special statements were recorded as to the remaining sixty-seven per cent. of the two hundred and thirty-four patients, but I am certain that while it includes a number of hard drinkers, it also contains a much larger proportion of persons whose habits have been temperate or comparatively so. There were no cases of acute alcoholism, and only a very few in the whole number that gave any record of former delirium tremens. The statistics of paresis in this respect are not so strikingly different from what is observed in the average of male patients who are not paretics, though the percentage of drunkards is considerably larger.

Thirteen of the twenty-eight male paretics whose disorder was attributed to ill health or overwork were hard or regular drinkers; five of the twenty cases from worry or trouble, one of those attributed to exposure to cold, three of the cases assigned to "brain disease," and seven of those credited to syphilis were of the same category. The single case attributed to narcotic indulgence was also given to excesses in alcoholics.

One of the living questions in regard to general paresis at the present time is that of its relations with syphilis. In the table here presented, syphilis is given as the cause in sixteen cases. I have included in this number all those in which it was mentioned in the papers received with the patient, whether alone or in combination with other causes. In eight of the sixteen no other cause was given. Intemperance, heredity and overwork were also mentioned in two cases each, and two others had traumatism and exposure respectively, given as adjunct causes. In former years no very special investigations were made as to the history of syphilis in paretics, and the facts in regard to the earlier cases are somewhat limited. Within the past three or four years, however, great pains have been taken to obtain all possible information in this regard. The difficulties are obvious, there is a very natural tendency

to conceal facts of this kind and it has frequently happened that after positive and repeated denials a full and incontrovertible history of infection has been obtained, and in others the diagnosis has been unquestionable. In a certain appreciable percentage also there has probably been honest ignorance both on the part of the patients and their friends. I have only been able to obtain positive statements of the facts in fifty-four per cent. of all the paretics which are summarized in the following table.

TABLE II.

	MALES.	FEMALES.	TOTAL.
Syphilis admitted and indisputable.....	87	4	91
“ highly probable	18	3	21
“ denied, but other venereal disease (chancroid, gonorrhœa) admitted	3		3
“ denied, and no positive evidence	9	2	11
Total number of cases in which facts or statements were obtained.....	117	9	126
Percentage of cases of undoubted syphilis			72.2
“ “ “ “ “ “			
and of probable syphilis			88.8
No facts or statements	82	26	108
Total of cases.....	199	35	234

In the remaining forty-six per cent. of cases the facts could not be obtained in regard to this point, the great majority having been dead for years, or received without any history and unable to give any account of themselves.

From the table it appears that a little over seventy per cent. had been undoubtedly infected, a result agreeing very closely with Mendel's figures. The probable cases, in regard to whom there was very little more doubt, increase the percentage to nearly eighty-nine. I have included under this head of "probable" cases, such as have been known to have been under specific treatment or in whom there was otherwise a history that could hardly point to anything else, without there being any positive statements or admissions as to the nature of the disorder.

In three cases, two syphilitic and one probably syphilitic, there had been made a diagnosis of locomotor ataxia, prior to any special cerebral or mental symptoms. One of these patients was still somewhat ataxic when admitted, the others were not noticeably so.

Of course in the greater number of cases it is necessary to rely on the history, but otherwise there would be no possibility of any evidence. The infecting attack of syphilis that causes brain or nerve lesion is generally a mild one and leaves no traces after the length of time that has elapsed when these latter have developed—a period in our cases ranging from two or three to twenty-five years and probably averaging eight or ten years. The statement made by some French authorities that there is a certain method of diagnosing former syphilis is not, I think, supported by experience or by the majority of competent specialists in this class of diseases; the history therefore is as a rule the only recourse. The difficulties of obtaining facts are obvious enough; but this, so far as it has any signification at all, indicates that the whole truth has probably not yet been obtained. Out of the eleven instances given in the table in which syphilis was positively denied, two were cases of conjugal syphilis—a dissipated railroad employé and his wife—and the other female was a woman of decidedly loose character.

Taking now the table of assigned causes, we find that seventeen of the thirty-four cases assigned to ill health and overwork were undoubtedly syphilitic and three more probably so; making altogether eighty-three per cent. of the cases in which any facts could be obtained; in like manner seventy-seven per cent. of the cases attributed to worry, one hundred per cent. of those attributed to alcohol and traumatism had also undergone prior specific infection.

Syphilis and intemperance seem from the above to be the most frequent antecedents of general paralysis, but the former is apparently the more general one. In the fifty-five patients in regard to whom statements as to syphilis and drinking habits could both be obtained, fifty were intemperate, of whom forty-eight were certainly or probably

syphilitic; one confessed to non-specific venereal disease, and one denied all infection but was a case of conjugal paresis, his wife also a paretic. Five were said to have been temperate, three of whom were syphilitic, one admitted non-specific disease and one denied all infection. The combination therefore of drinking habits and syphilis seem specially predisposing to paresis, while temperate habits are no protection if syphilis exists.

The accompanying tables and remarks taken from the last report of the hospital for the biennial period ending June 30, 1890, are of interest in this connection as showing to some extent the relative frequency of syphilis in paretics and in the other forms of insanity.

TABLE III.

Assigned Causes of Disease in Paretic Dements Received During Biennial Period.

ASSIGNED CAUSES.	M.	F.	T.
Overwork	7	1	8
Business trouble	6		6
Syphilis	7		7
Intemperance	4		4
"Paralysis"	2		2
Traumatism	2		2
"Cerebral meningitis"	1		1
"Disappointment in marriage"		1	1
"Cocaine"	1		1
"Heredity"	1	1	2
"Ill health"	1	1	2
"Tape worm"	1		1
Unknown	31	6	37
Total	64	10	74

"Twenty-seven non-paretic patients (22 males, 5 females) were admitted during the biennial period with a history of syphilis, out of a total of 1,266. One or two of these are possibly cases of paresis. In other words, syphilis is twenty times as frequent in paretic as it is in non-paretic patients. Leaving out probable cases of syphilis (that is, those in which it is probable, but not certain) the percentages of

this disease for the biennial period may be stated as follows, in paretics and non-paretics, respectively, as far as we have the facts: Paretic demented, 40.56 per cent. syphilitic; non-paretic insane, 2.13 per cent. syphilitic."

When we consider that from ten to fifteen per cent. of all cases of insanity are reckoned by the best authorities to be directly due to intemperance, the relatively greater share of syphilis in the production of paresis is very strongly suggested.

TABLE IV.

Condition as to Specific Disease of Paretic Demented Admitted During Biennial Period.

CONDITION.	M.	F.	T.
Undoubtedly syphilitic.....	29	1	30
Probably syphilitic	11	1	12
Syphilis denied but other venereal disease admitted.....	2		2
No facts obtained.....	22	8	40
Total	64	10	74

Heredity, which was the assigned cause in three cases plays a comparatively small part according to our statistics in the production of paresis. In our 234 cases, facts or positive statements as to heredity could be obtained in 160. In 117 of these it was pronounced good—there was no taint of insanity or neurotic disease in the family history. In nine cases there was only a general statement that the disease was "hereditary." There was direct paternal heredity in six cases, four men and two women, and in one of the latter the father's disease was likewise paresis. Collateral paternal heredity occurred in two males and one female. Direct maternal heredity was reported in four patients, three men and one woman, and collateral maternal heredity in three, all males. In one male and one female there was a heredity of insanity on both sides, and in two males paternal and maternal collateral heredity. In one case (male) the par-

ents were first cousins. In thirteen other cases, all males but one, there was a heredity of "paralysis," alcoholism or epilepsy, thus making a total of 43 individuals with a neurotic heredity out of 169, or, counting cases in which no data were obtained, out of a total of 234. In other words, considering only patients, in regard to whom some history can be obtained, we find a heredity of insanity or a neurotic taint in twenty-six per cent. of our general paretics, while in the average of our patients taken altogether, the same methods of estimation have given in former times over forty per cent. These statistics, therefore, so far as they go, seem to support the older view of Morel and others that general paresis is one of the least hereditary forms of insanity.

Without venturing any positive generalizations from this small number of cases, it may nevertheless be stated that they indicate to a certain extent that

1. While it often does occur in those hereditarily predisposed to neurotic or mental disorder, general paralysis is more than most other forms of insanity an acquired disease, not dependent on hereditary neurotic taint.

2. That while it may be ascribed to various exciting causes, such as mental strain, worry, ill health, or overwork, it is found, when all the facts can be ascertained, to have as an antecedent, syphilis, in a great majority of cases.

3. In a small number of cases in which there is found to be no positive syphilitic history, it is possible that no such taint has preceded the disease and that its symptoms can be produced in non-syphilitic individuals. These cases, considering the great predominance of specific antecedents, may, reversing the former usage, be properly called cases of pseudo-general paresis.

4. Intemperance, while a frequent antecedent of paresis, is not by any means a universal or essential one.

AUTOPSY ON A CASE OF ATHETOID SPASM
MYOTONIA, AND DIFFUSE BILATERAL DIS-
TURBANCES OF SENSATION—CHRONIC CON-
VEXITY MENINGITIS OF BOTH HEMISPHERES
WITH CORTICAL AND SUBCORTICAL SOFT-
ENING—LESIONS MOST MARKED IN THE
POSTERIOR PARIETAL REGION.¹

By CHARLES K. MILLS, M.D.

THE patient was for more than a year an inmate of the nervous wards of the Philadelphia Hospital, and was the second of two cases used as texts for a clinical lecture delivered at the hospital, and subsequently published in the *International Clinics* for April, 1891. I will summarize chiefly from this published lecture, the most important facts in his history, referring any one desirous of fuller details to the volume. It is important, owing to the post-mortem findings, that an elaborate history of the man had been put upon record.

Nine years before his death he had what was supposed to be a sunstroke, which was soon followed by a fit or seizure, and this by similar attacks every week or two for about a year, and subsequently at rare intervals. He began to develop a spastic state and athetoid movements in the left limbs, probably first in the upper extremity soon after his early seizures, and after the first or second of these his left leg was slightly paralyzed. The following paragraph from the published account, describes his general appearance and condition:

“Inspecting this patient sitting down, it will be noticed that he sits with his head erect, slightly thrown back and stiff, appearing like a soldier in the old fashioned stock—his eyes directed somewhat fixedly to the front. The pos-

¹ Read before the American Neurological Association, at meeting held at Washington, September 22d, 23d, 24th, 1891.

terior muscles of the neck, and to a certain extent all of the muscles of this region, seems to be in a more or less spastic state, to which the forced and somewhat rigid position of his head is probably due. Sometimes his head becomes twisted a little to the left and backward. His limbs, trunk and body generally, even when quiet and uninfluenced by voluntary efforts, have more or less spasticity or rigidity. The lines of the forehead are more decided upon the left than upon the right side, as are also the glosso-labial folds of the left side of the face. His mouth is at all times somewhat distorted. The left half of the upper lip has the appearance of being drawn somewhat under, giving the curve of the lip on this side a twisted appearance. His general muscular development is good, perhaps excessive; and the muscles can be seen larger and harder on the left side than on the right."

The most striking feature was certain choreoid and spastic phenomena brought out on any willed action, as opening his mouth, speaking, lifting his hand, etc. The photograph reproduced by permission from the *International Clinics* shows the effects of opening his mouth. The muscles of the face, neck and tongue and extremities took part in a series of athetoid and tonic contractions, much more marked on the left half of the body, although distinctly present on the right. In particular, when he attempted movements with his left upper extremities it was thrown into wild contortions. Manipulation as well as voluntary effort caused the athetoid movements as well as tonic spasms. He presented in brief a curious mixture of rigidity and mobile spasm, usually induced but perhaps sometimes spontaneous. Some paresis of the left leg was present.

The sensory disturbances were reported in the lecture as follows:

"Efforts have been made to test him carefully for sensation, but with results which are contradictory and confusing, owing to the spasm which is induced by the examination, and also perhaps to the general mental condition of the man. Going over him a second and a third time, somewhat different results may be obtained. In general, it was

determined that sensation was markedly diminished in the left leg and the outer side of the right thigh, also, apparently, in both feet. A needle could be firmly thrust into the skin in these regions without any response, although



sometimes some reflex muscular contraction was produced. On the inner aspect of the right thigh and leg, less so on the left, sensation to pain seemed to be acute. In testing for sensation he often referred his pain to his toes and jaws, crying out, 'Oh, my toes! oh, my jaws!' accompanying the expression with grinding of his teeth. Over nearly the

whole of the left arm and left side of the chest sensation seemed to be lost, deep thrusting of needles giving no result. In the left hand, in one or two places, he seemed to feel; also, at one or two points on the left arm. The dorsum of the hand and fingers, particularly towards the radial side of the arm, was sensitive. On the right side of the chest sensation was acute, repeated, prompt responses being obtained from one prick. These results are not absolutely to be relied on, owing to the answers obtained at different tests. Sometimes he would cry out when he had not been touched. Some of the confusion in obtaining proper responses may have been due to the fact that efforts to fix his attention upon the examination caused the initiation or increase of his painful spastic condition."

Knee jerk was increased and muscle jerk, front tap and ankle clonus were present. Percussion gave phenomena similar to Erb's myotonic reactions.

It is of interest in connection with the findings that he had no headache.

On one occasion, while examining him he had an attack of unilateral Jacksonian epilepsy, chiefly affecting the face and the hand of right side, and associated with marked perversion but not total loss of consciousness. Careful inquiry since the publication of the account of the case, has disclosed the fact that at long intervals he had had similar attacks, varying in severity, and sometimes on one and sometimes on the other side of the body, but oftenest on the left.

The lecture on this patient was delivered about ten months before his death. From that time until his last illness, the spastic, athetoid, sensory, and other phenomena, gradually increased and spread, but not to such an extent as to absolutely disable him.

About midnight, August 24, 1891, he had a convulsion or series of convulsions lasting about half an hour. No record of the character of this convulsion was made. Immediately after it, however, his urine was drawn and was found to contain a large quantity of albumen, and he was treated in accordance with this indication. He remained

in bed for three days and was then able to be up and about the ward.

On August 31st he was again taken seriously sick with headache, high fever, and drowsiness. His temperature reached 103°. The spasticity of his limbs and his athetoid movements continued, but not nearly so markedly as when on his feet. Twitching of the right side of his face and of the orbicularis palpebrarum were frequent. He died September 5th; his marked symptoms during his last illness having been headaches, stupor, mental weakness, and fever, with very irregular pulse, respiration and temperature. His urine continued to show a large amount of albumen.

Autopsy.—As I was absent from the city at the time of the patient's death, the autopsy was made by my colleague, Dr. F. X. Dercum, and by Dr. Alfred Stengel, acting pathologist to the hospital; but a few days subsequently I examined the brain. The calvarium was dense and heavy. The dura mater was unusually adherent and nowhere translucent. The pachionian depressions were not unusual. Over the central part of the lateral surfaces of both hemispheres, that is, chiefly over the superior and inferior parietal gyres, the dura was adherent to the pia mater. The pia was deeply injected, thickened, and infiltrated with plastic lymph, and in numerous places were more or less firm attachments to the brain substance; but the injection, infiltration, exudation and adhesions were much more marked in the postero-parietal regions than elsewhere.

Beneath the area of meningitis, both the cortex and the subcortex were softened, giving the appearance of a sunken subcortical or subpial cyst. On the opposite left side of the brain in a nearly corresponding but somewhat smaller area was a similar belt of inflammation and softening. Subsequent incisions on both sides showed that the softening included the whole of the gray matter, and involved to a considerable extent the white, but did not invade the ganglia or capsules; it was confined to the supra-ventricular corona radiata.

The vessels at the base were somewhat stiffened, but no other brain lesions were discovered. The pons-oblongata

and spinal cord were removed, but no macroscopical lesions could be detected; they were reserved for microscopical examination.

Both lungs were dark and hæmorrhagic, especially at their bases; they contained massive hæmorrhagic infarcts. The heart and liver were normal. The spleen was large and showed two hæmorrhagic infarcts. The right kidney was quite small, measuring only one and one half inch in length, and one and one quarter inch in width; it was markedly lobulated. The left kidney was large and its surface was studded with hæmorrhagic infarcts, several of which had softened and showed purulent walls.

I may be allowed to theorize a little as to the relations of the post-mortem findings to the clinical phenomena.

A convexity meningitis was undoubtedly present, and was so diffuse as to have possibly caused more or less scattered irritation of the motor cortex. The careful autopsy, however, showed that this meningitis was by far most intense at one particular region, namely, over the superior and inferior parietal gyri in both hemispheres—distinctly back of both ascending convolutions. My own view is that the true motor cortex does not extend back far enough in the human brain to include these two convolutions, but probably ends about the so-called retro-central convolution, or at the point where the calloso-marginal fissure indents the median edge of the hemisphere.

The choreoid and athetoid phenomena could perhaps be explained by the scattered irritation of the motor cortex; I do not believe that this explanation will hold good for the tonic spasticity and for the sensory disturbances which were present in this case, and we may even perhaps better explain the clonic spasm. The dura mater was so glued to the pia, and the pia-arachnoid so firmly adherent and incorporated with the cortical substance, that many of the blood vessels which form a large part of this inner membrane were obliterated by pressure and increasing inflammation, and it was as a result of this that the cortex and also a considerable extent of the subcortex had necrosed. This softening was on both sides. The subcortical soften-

ing was of course chiefly in relation with the same region as the cortical, but from its position it also may have included some of the white motor fasciculi of the corona radiata from the central gyres, and from the gyrus fornicatus and quadrate lobule.

The rigidity or tonic spasticity, as in the other case reported at this meeting, I attribute to the subcortical softening of the motor fasciculi and it is not improbable that the obliterating of fibres from these motor bundles from time to time, had something to do, in addition to the meningo-cortical irritation with the production of the athetoid phenomena.

From whatever point of view we may regard the case, and I am aware that the effects of the lesions are perhaps capable of somewhat different interpretations, the case is one of importance in the elucidation of several of the still troublesome problems of cerebral localization.

It is, for example, of interest in regard to the localization of the cortical centres for cutaneous sensation. As is well known, at least three views are still held, (1) that the motor and cutaneous sensory centres are identical, or more or less identified—a view ably advocated by Dr. Dana before the American Neurological Association at the meeting of the Congress of 1888; (2) that these centres are distributed in a special and separate region of the cortex, which Ferrier places in the gyrus fornicatus and hippocampal gyrus; (3) that the motor region of the cortex and a separate district of the brain are both concerned in the representation of cutaneous sensations. In my paper on *Cerebral Localization*, read at the Congress in 1888, I contended for the separate cortical representation of these senses or sensations, and located this sensory zone in a large lobe which includes the hippocampal convolution, the gyrus fornicatus, the quadrate lobule, and posterior parietal convolutions, or at least the upper of these. This lobe is anatomically demarcated by great fissures, and almost encloses or encircles the motor lobe. I held then and still believe that the sensory cortex is distinct from the motor, but lies nearly everywhere close to it; also that separate centres

or areas of representation exist for different zones of the skin, and possibly subcutaneous tissues, as the feet, leg, hands, arms, face, etc.; and that these subdivisions of the general sensory zone are in some way topographically related to the corresponding subdivisions of motor cortical representation.

Because of the difficulties of experimentation, the physiological experiments to determine this localization, while striking have not been entirely satisfactory; embryological, teratological, and anatomical evidences are insufficient; and the clinico-pathological contributions have been conflicting. Dana has made a fair but by no means conclusive showing for the view that the motor and sensory cortex are identical. Certainly if distinct and separate cutaneous sensory centres exist in the cortex, destruction or irritation of them should have some effect; but probably the chief reason that we have so few conclusive cases is that each hemisphere acts for common sensation for both sides of the body to a greater extent than for any other function. Conclusive clinico-pathological observations with reference to this mooted question will be those in which we have autopsies of well studied cases which show corresponding lesions of both hemispheres. Such lesions were presented by this case; lesions which were primarily cortical though to some extent they became also subcortical, as the progress of the meningeal disorder caused obliteration of successive terminal blood vessels. The most extensive and advanced meningeal and cortical lesions in this case were in the postero-parietal region. Here the pia mater was thickened and so adherent to the cortex that it could not be detached, and large but irregularly diffused cortical softening had taken place.

Fortunately, the patient was studied, as carefully as it was possible, for sensation; and although the results above given were not altogether satisfactory they were interesting.

The best explanation of the production of the sensory disturbances in this case would seem to be that they were the result of irritation and destruction of true sensory centres in the postero-parietal region, of commissural as-

sociation fibres between the sensory and motor cortex; and, thirdly, of fibres ascending from the posterior division of the internal capsule to the cortical sensory lobe which I have described.

The posterior extension of the most positive district of this meningo-cortical lesion was such as to infringe upon and involve the angular convolution. His eyes were examined both by Dr. de Schweinitz and myself, but not for word-vision. It was difficult to make a thorough examination of his vision. Dr. de Schweinitz reported no disease of the fundus oculi except perhaps slightly gray discs. My report states that "he cannot read—that is, he is not able to read because of the manner in which he is affected by his disease. His sight, as near as can be made out, is perfect, but he says he does not read because it hurts him to try to do so. The effort to turn a page, or even to fix his attention upon the reading, gives him pain and throws him into spasms, more or less marked, and of the kind described."

It is not improbable that he suffered from word blindness, but it is perfectly evident that he was in no sense object-blind. His hearing was defective, particularly in the left ear, but he certainly was not word-deaf, although it was necessary to speak to him sharply and loudly in order to make him understand.

SUBCORTICAL HEMORRHAGIC CYST BENEATH THE ARM AND LEG AREAS.¹

BY CHARLES K. MILLS, M.D.

THE following case is reported chiefly with a view of emphasizing a single point in the differential diagnosis of a limited lesion of the motor sub-cortex.

R. J. P., sixty-six, white, a seaman, had an attack of sub-acute rheumatism twenty-two years before coming to the hospital. No history of syphilis or alcoholism could be elicited. On a cold day in January, 1888, while in a wagon, he had a "queer feeling," and found that he had lost power in the right leg and arm. He did not fall or become unconscious. He at first could neither sit or stand, and has never since been able to stand.

In February, 1888, about one month after the paralysis, suddenly and without warning, his right hand and forearm began to twitch. He was at first entirely conscious and watched the progress of the seizure. The arm was first drawn upward, then the fingers and hand were flexed, next the forearm was bent upon the arm; then the arm—from his description, spastic—was elevated. Next his head and neck began to twist to the right, his right face also twitching. He thinks he became unconscious. This is a description of the seizure as he was able to observe it five times since February, at intervals of about a month apart.

He had a sixth and last fit about the middle of July, 1888. In this, after the arm, face and head had been affected in the usual serial order, according to the above description, the spasm passed into the right leg before he became unconscious. He could not give as accurate an account of the leg spasm as of that affecting the arm and face, but, from his statement, the leg probably flexed on the thigh and became very rigid with shaking movements.

He had no vertigo, no double vision, no tinnitus, no nausea, no headache, and no pain in the arm, face, nor leg, except sometimes a cramp-like feeling. Shortly after the first spasm, the right foot and leg swelled, and it had since

¹ Read before the American Neurological Association, at meeting held at Washington, September 22d, 23d, 24th, 1891.

done this frequently. He had some tremor of the tongue. Faradic and galvanic contractility were retained.

The knee-jerk on the left side was about normal; no muscle-jerk or ankle clonus. On the right side knee-jerk and muscle-jerk were much exaggerated, and ankle clonus marked; no wrist-jerk, elbow-jerk, nor jaw-jerk could be elicited. Touch, pain and temperature senses were normal, as were also taste and smell. The pulse usually ran 85 to 95 per minute. The arteries were markedly atheromatous. The heart sounds were regular and forcible, the sound at the apex accentuated, but no murmurs could be heard anywhere.

The most persistent and perhaps the most distinctive symptom in this case, was a continuous spasticity of both arm and leg, but particularly the latter, on the paretic side. The right leg remained all the time in an almost rigid condition, slightly flexed at the knee and in a state very similar to that of both limbs in many cases of spasmodic tabes; it was indeed an almost typical spastic paralysis of this extremity. The right arm was also markedly spastic, but the rigidity was not so extreme as in the leg.

Observations in cranial temperature were not made. Percussion and strong localized pressure were used on various occasions, but gave no indication. The patient never complained of localized pain.

One day he had a sudden and severe apoplexy, with profound unconsciousness, Cheyne-Stokes breathing, and the train of symptoms belonging to extensive intra-cerebral hemorrhage; but for the purposes of this report it is not necessary to go into the details of this attack which terminated fatally in a few hours.

The autopsy revealed in the right hemisphere an immense recent hemorrhage into the ganglia, tracts and surrounding parts, breaking also into the lateral ventricle—a major apoplexy in a location, and of a character often described, which was undoubtedly the cause of his death; but my chief interest was in the examination of the other hemisphere.

External examination of this left hemisphere revealed nothing but a dark spot about one-fifth of an inch in diam-

eter at the bottom of the upper extremity of the central fissure. On exploring the left lateral ventricle, a yellowish black area, one-third of an inch in length was noticed in the white substance composing the curved roof of the ventricle, about the middle of its antero-posterior extent. Carefully cutting into this it was found to be a hemorrhagic cyst, which was in the subcortex related to the middle and upper thirds of the anterior central convolution. An arm of this cyst extended to the spot of degeneration in the fissure of Rolando.

The differential point which would seem to be taught by this case is one which has already been alluded to by Lloyd and myself, as well as by Seguin and others—that is, the predominance and persistence of tonic spasm in cases of subcortical lesion. Numerous as have been the reports on cases of restricted and of diffused motor cortical lesions, few instructive cases of isolated subcortical lesion have been recorded, and these have been mostly tumors. Efforts have been made to designate the localizing signs and symptoms of such growths by Seguin and Weir, also by others, as Osler, Lloyd and the writer, Bernhardt, Nothnagel, and Jackson. Franck made numerous experiments on the cerebral motor fasciculi, the most important facts demonstrated by him being that electrical excitation of these fasciculi produces only tetanic contractions, ceasing with the excitation. The one fact which would seem to be emphasized by the record of this case is that a lesion partly destructive and partly irritative—such as was the local hemorrhage which subsequently degenerated into the cyst revealed by this autopsy—has for its most characteristic symptom a persisting spastic paresis or paralysis. The attacks of beautifully characteristic Jacksonian epilepsy which the patient experienced, were probably due to cortical—not subcortical—irritation, as the lesion at one point slightly invaded, from within outwards, the cortex; and even if this invasion had not taken place, as Seguin has suggested, irritation may be radiated centrifugally as well as centripetally from subcortical lesions to the neighboring gray matter.

In another case, with autopsy, a report of which will be made at the present meeting, the lesions which were bilateral, were also both cortical and subcortical, and partly in the motor subcortex; and one of the most striking of several striking phenomena was persistent myotonia.

NOCTURNAL ENURESIS IN MOUTH-BREATHERS.

In the "*Centralblatt f. klin. Medicin.*" No. 23, 1891, there is an article on the subject by Dr. Otto Koerner, who writes that in 1884 Major described the frequent occurrence of nocturnal enuresis in children who breathed through the mouth, owing to obstruction in the nasal cavity. This observation was subsequently confirmed by Zeim and Block. Although none of these authors cured the enuresis by removing the obstruction to respiration, yet they advanced theories which were to explain the wetting of the bed in consequence of the mouth-breathing. Major believes that the lowered temperature of the air breathed through the mouth occasions superficial respirations reflexly, thus giving rise to a gradual carbonic-acid intoxication, which leads to an involuntary evacuation of the bladder. Ziem accepted this explanation essentially, but insisted that the respiratory interchange of gases was less in mouth-breathing than in nose-breathing. Bloch maintains that mouth-breathing children suffer from an "irritable weakness." The irritation of the full bladder producing a dream-picture as if the patient were in the usual position for emptying the bladder.

Schmalz was the first observer who showed a causal connection between mouth-breathing and enuresis. He permanently cured a child by the removal of hypertrophied portions of the turbinated bones. The author reports two additional cases that were benefited by treatment. He concludes that these observations seem to show that in individual cases the interference with nasal breathing may lead to enuresis. But, as in a preponderating number of children with long-existing nasal obstruction, no wetting of the bed is noted, it would seem to be established that the mouth-breathing alone does not produce enuresis, but that another factor must be operative, possibly a weakness of the sphincter vesicæ.

W. M. L.

THOMSEN'S DISEASE—REPORT OF A CASE.¹

BY E. B. ANGELL, M.D., ROCHESTER, N. Y.

THOMSEN'S disease, or congenital myotonia, is so rare a malady that the report of an additional case will, I venture to believe, prove of interest. Most of the cases recorded have occurred in Germany, and, curiously, in the present instance the patient was a German by birth, although he migrated to this country in early boyhood.

In March last, by request of Dr. J. W. Whitbeck, of Rochester, August B—— consulted me for the peculiar symptoms so significant of this disorder. The patient was twenty-one years of age, single, and for the past five years had followed the trade of a clothing cutter. His general health was excellent and the only noteworthy illness had been an ordinary attack of typhoid fever at the age of five. The family history was negative, with one important exception. His oldest brother had suffered from the same affection twenty-five years ago, and a few months prior to the birth of my own patient, shot himself to avoid constant penalty and disgrace. Compelled to enter the German army, and unable to execute his duties, he was constantly subjected to the harsh discipline awarded malingering, since at that time the disease had not been recognized, and he resorted to the only way of escape. In the present case the disease was congenital, the characteristic symptoms appearing in infancy and gradually becoming more marked, though not till two years ago did they cause serious inconvenience. The interference with immediate muscle action became pronounced and he ascended stairs or arose from a chair with difficulty. Persistent contracture of the calf muscles developed sufficiently to cause a permanent talipes equinus, due perhaps to the demands of his work, which required him to stand the whole day. So powerful was the spasm of the affected muscles that a slight push or slip would result in a fall, the least involuntary effort to recover himself proving disastrous. Truly he was being mastered by his own muscles.

¹ Read before the American Neurological Association at Washington, September 22d, 23d, 24th, 1891.

At the time he consulted me this muscular abnormality was well developed. The muscles were hard and prominent, athletic in appearance, although unsymmetrically enlarged. In normal muscular development the muscle mass is symmetrical throughout. In this pathological condition the belly of the muscle is over-developed, producing a peculiar deformity, differing, I believe, very materially from pseudo-muscular hypertrophy, which disease it superficially resembles. Voluntary effort of the affected muscles after a period of repose immediately developed tonic spasm, momentarily inhibiting the intended action. The rigidity then slowly relaxed, and when once the spell was broken, normal control was easily sustained. The peculiar "intention krämpfe" were most marked when the patient undertook to regain his feet after a fall. His efforts to use the muscles, rigid at the initial impulse, were violent but fruitless, and only by climbing up his legs with the aid of his hands, as in pseudo-muscular hypertrophy, could he accomplish his purpose. The muscles affected were the quadriceps extensor of the thigh, the calf muscles, the deltoid, and, to a lesser degree, the others of the legs, arms and trunk. The muscles of the neck, face and head were unaffected, and there was no interference with speech or with swallowing. He had, however, noted some difficulty in relaxing the grasp of the hand.

Mechanical stimulation of the muscles produced energetic tonic contractions, succeeded by gradual relaxation, causing the dimpling and furrowing generally observed. My experience in the present case was that this reaction was most readily obtained by percussion upon the tendinous insertions of the muscles. Under continued mechanical stimulation the reaction became weaker and was ultimately lost.

Galvanic stimulation gave the characteristic reactions, but even with a current of 20 or 30 milliampères the peculiar undulatory contractions described by Erb could not be satisfactorily obtained, although rhythmic contractions were noted during the period of circuit closure. The contractions were sudden, persistent and painful, continuing for twenty or thirty seconds after removal of the electrodes. The galvanic formula was as follows, both normal and abnormal reactions being given for the sake of comparison :

Gal. Amp. .020. Electrode disk .005 m.	Thigh Muscles (Patient).	Arm Muscles (Self).
K. C. C.	100	20
A. C. C.	50	10
A. O. C.	10	0
K. O. C.	0	0

The formula indicates increased galvanic irritability, but no qualitative change other than a distinct anodal opening contraction. Response of the muscles to faradic stimulation was pronounced, prolonged and very painful, while the anodal contraction was even more marked than the kathodal. The same dimples and furrows obtained by mechanical excitation were developed, and were even more persistent after cessation of the current. The reaction of the nerves to either current was unaltered.

All the reflexes, superficial and deep, were intensified; the knee-jerk especially marked and much increased by "re-enforcement." There was no sensory disturbance of any sort, all forms of stimulation giving normal response. The dynamometer, recently perfected by Tiemann, indicated a surprising weakness even in the forearm muscles not materially affected. The grip gave a pressure of 110 pounds for the right hand and 80 pounds for the left, about a third of the normal rate.

One reaction was obtained which has not, to my knowledge, yet been noted. A decided pin prick produced a clean cut, punch like perforation, surrounded by a distinct white wheal. So prolonged was the resulting muscle spasm that, although the pin was thrust completely through the skin, bleeding did not occur for several minutes. In no other myopathy have I noted so marked a reaction of this sort, and I suggest it as an additional diagnostic sign. Fibrillar twitchings and the double contraction under percussion, noted in progressive muscular atrophy, were never observed.

The ocular examination was kindly made by Dr. Sumner Hayward, of Rochester, with the following result: Right eye normal, save a few opacities in vitreous and myopia one dioptré; left eye normal in every way. Pupillary reaction normal, no contraction of field, no dyschromatopsia; relative movements of lids normal. The eye, when made to follow quickly the movements of a pencil in all directions, revealed a jerky indecision, not promptly following the pencil and then not fixing accurately but, as it were, seeking the pencil before becoming steady; muscular balance of the eyes perfect.

The extremities were cold and bluish in tint, from impeded circulation. No microscopical examination of the muscular fibre was attempted.

In the treatment of this case two or three points are worthy of mention. When he first consulted me, galvanism with a strength of amp. .020 or .025 was employed alter-

nate days with very meagre results, and shortly its use was discontinued. Later the bromide of sodium was given in excessive doses, with an ill-defined idea that it might lessen the muscular stiffness. For three days the patient took fully an ounce of the salt daily, in four divided doses, with a somewhat unexpected result. It did reduce muscular activity, but apparently in the less affected muscles only, intensifying seriously the muscular disturbance.

The muscles which responded normally to voluntary impulse were much weakened, while those subject to the disorder were not materially influenced by the drug. Locomotion was almost impossible, the patient stumbling over his own feet, unable to get them out of his way; while the cramping of the affected muscles was painfully aggravated. The usual symptoms due to bromide intoxication were well marked, while all the mechanical and electrical reactions were somewhat lessened. The ill effects of the drug passed off within a few days, leaving my patient neither better nor worse for the experiment. I only refer to this in passing, because of the bearing this therapeutical test may have upon the essential nature of the disease. Certainly the excessive response to reflex stimulation, the difficulty of establishing voluntary control, as well as the marked variation in the muscular phenomena under the influence of the depressor motor drug, point rather conclusively to the local nature of the disorder.

Knowing the hopelessness of all ordinary methods, we resorted to the following expedient, assured that whatever might be the remote cause of the disease, excessive muscular irritability was at least its expression. The patient was put in bed, and the ordinary rubber bandage was applied to the legs, leaving the knees free. Our purpose was to limit the activity of the affected muscles and produce sweating, hoping thereby to secure relaxation and perhaps retrograde metamorphosis. At least the elastic bandage gave support and resulted in very material improvement. The ordinary cotton roller, employed for a time, was unsatisfactory and as the rubber bandage was troublesome, gum sheeting, the thickest possible, was substituted. An elastic corset was carefully fitted to either calf and thigh and made with re-enforced eyelets along either margin, so that it could be laced tightly about the part. By this elastic covering the muscles of both legs were firmly bound and very satisfactorily supported. Steady improvement in his gait and equipoise was noted, while the stiffness and pain were much

abated. Unfortunately, circumstances would not admit of any prolonged stay at the hospital, and two weeks after the application of the rubber supports he was allowed to go home and directed to continue their use. At this time he no longer fell, on stumbling; walked easily, without the usual struggle to get started, and in most ways could very well control muscle action. However, the inherent muscular weakness was unaltered and the reactions but slightly modified. Unfortunately, no pure rubber sheathing of sufficient thickness could be obtained to resist the constant strain from exercise, and an ordinary elastic stocking was substituted. This, however, did not answer the purpose, nor did a pure rubber facing make the stockinet more efficient, and some six or eight weeks after his return home all the difficulty in gait returned. However, I am satisfied that a sheathing of pure rubber gum, with limitation of muscular exertion for an extended period, will very markedly ameliorate the symptoms, at least in this case. Could the rest in bed have been sufficiently prolonged, I am confident the marked improvement would have been more satisfactory.

DIAGNOSIS OF LESIONS OF THE OPTIC LOBES.

Eisenlohr reports the case of a young man, twenty-eight years of age, who was struck in the head with a bullet from a revolver, the ball being found in the tubercula quadrigemina at the necropsy, who developed the following symptoms:

1. Tremor of the left arm, with unequal pupils, following secondary irritation of the pyramidal tract.

2. Associated paralysis of the eye-muscles, with diminution of the acuteness of vision, this latter symptom being due to a lesion of the optic lobes, the ophthalmoplegia depending upon a concomitant lesion of the nucleus of the oculo-motorius.

3. Polyuria without glycosuria, cerebellar ataxy, and finally symptoms of cerebral compression. The writer emphasizes the existence of visual and pupillary disturbances in lesions of the optic lobes.—(*Rivista clinica e Terapeutica*, 15, 1891.)

F. H. P.

A NEURO-TOPOGRAPHICAL BUST.¹

BY WILLIAM C. KRAUSS, M.D., BUFFALO, N. Y.

A NEURO-TOPOGRAPHICAL bust needs be one showing the topography of the nervous system of the head and neck on a model closely resembling that of the human form. It seemed to me that a bust constructed on those lines would be of great benefit to the neuro-specialist as a means of reference and comparison, while to the teacher it would serve as an important aid in the elucidation of facts in class-room demonstrations.

With these objects in view, a bust was modelled in plaster, life size, offering the following special features:

The fissures of the brain are represented by grooved lines, deep or shallow, according to the size of the respective fissures in the human brain. In order to render them more distinct and visible they have been traced in black. These lines are not intended to represent accurately the intricate windings of the various fissures, but only the general outlines and the relations of the various fissures to one another.

The position of the several centres presiding over the functions of the body, as far as known, could be easily designated on the bust, thus keeping before our eyes the brilliant achievements constantly being made in this branch of our science.

The face and neck represent the various electro-motor points of the muscles and nerves as determined by Erb, v. Ziemssen, *et al.* The motor points of the trunk and various branches of the trigeminus, the hypoglossal, accessorius, etc., are indicated by circles slightly raised which, in order to make them more apparent, have been painted yellow. The course of the phrenic nerves, and the several trunks of

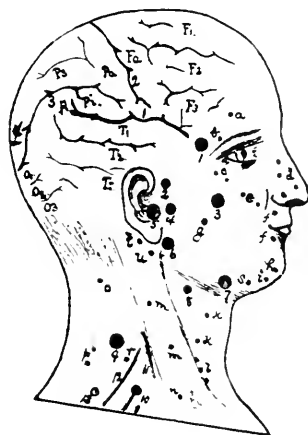
¹ Exhibited at the meeting of the American Neurological Society, Washington, D. C., September 22, 23 and 24, 1891.

the brachial plexus in the neck are marked by slightly grooved lines also painted yellow.

In contrast to the nerves, the motor points of the muscles are represented by smaller circles, which have been painted red.

The designation of the various points has been purposely omitted on the bust, but may easily be done, either by small printed slips, or by figures and a reference table.

The work of the moulder, Mr. Gustave Freret, of 155 E. 50th Street, New York, has been skilfully and well done, and he is prepared to furnish duplicates at any time.



EXPLANATION OF PLATE.

CRANIAL REGION.

1, sylvian fissure. 2, central fissure (Rolando). 3, parietal fissure. 4, Occipital fissure. F1, superior frontal convolution (superfrontal). F2, middle frontal convolution (medi-frontal). F3, inferior frontal convolution (subfrontal). Fa, ascending frontal convolution (precentral.) Pa, ascending parietal convolution (postcentral). Ps, superior parietal convolution (parietal). Pi, inferior parietal convolution (subparietal). A, angular convolution. T1, superior temporal convolution (supertemporal). T2, middle temporal convolution (meditemporal). T3, inferior temporal convolution (subtemporal). O1, superior occipital convolution. O2, middle occipital convolution. O3, inferior occipital convolution.

FACIAL REGION.

1, trifacial nerve; superior branch. 2, trifacial nerve; superior branch. 3, trifacial nerve; middle branch. 4, trifacial nerve; middle branch. 5, trifacial

nerve; trunk. 6, trifacial nerve; inferior branch. 7, trifacial nerve, inferior branch. 8, hypoglossal nerve. 9, accessorius nerve. 10, Erb's point (supra-clavicular point). 11, phrenic nerve. 12, brachial plexus. 13, axillary nerve.

MUSCLES.

a, frontalis. b, corrugator supercilii. c, orbicularis palpebrarum. d, nasal muscles. e, zygomatic muscles. f, orbicularis oris. g, masseter. h, levator menti. i, quadratus menti (depressor labii inferioris). k, platysma myoides. l, hyoid muscles. m, sterno-cleido-mastoid. n, omo-hyoid. o, splenicus. p, trapezius. r, levator anguli scapuli. s, triangularis menti (depressor anguli oris). t, stylo-hyoid. u, digastric.

ELECTROLYSIS OF THE CEREBRAL CORTEX IN THE TREATMENT OF JACKSONIAN EPILEPSY.

Giornale della R. Accademia di Medicina di Torino. Luglio-Agosto, 1891, p. 484.) Dr. Negro made a communication before the Academy of Medicine of Turin on "L'elettrololisi della Corteccia Cerebrale Applicata alla terapia della epilessia parziale."

Among the operative procedures employed in the treatment of certain forms of partial epilepsy, the excision of portions of the cerebral cortex corresponding to the motor centres has been of late successfully performed. This method of excision offers several inconveniences, the principal of which are the following :

1. Injury to the neighboring cortical or subcortical regions, thus producing paralysis or paresis of muscles not in the realm of the Jacksonian epilepsy.

2. These operations are very bloody, and sometimes give rise to serious hemorrhages.

The author proposes to substitute for the knife, electrolysis, to accomplish the excision of the brain cortex. He places a large electrode, the positive pole upon the sternum of the patient, whilst with the negative pole tipped with platinum, which he inserts at various depths into the diseased brain substance, he effects electrolysis.

A current of 2 to 3 milliampères will in a very short time destroy the diseased brain tissue.

An operation performed by Dr. Carle with this method in a case of meningo-encephalitic gummosa, succeeded in suppressing the epileptic phenomena. W. C. K.

A CASE OF ATAXIA OF IRREGULAR TYPE FOLLOWING INJURY.

By F. N. DERCUM, M.D.,

Instructor in Nervous Diseases, University of Pennsylvania.

IT is well recognized that falls and blows upon the back, and, indeed, upon the body generally, stand not infrequently in a direct causal relation with disease of the cord. The resulting affection may be general as witness the occurrence of concussion myelitis, or, it may be limited to special tracts. In the latter instance, the tracts most frequently affected are the lateral columns, and we have gradually appearing the familiar picture of a spastic paraplegia—a lateral sclerosis. Less often the posterior columns are involved, and we have the resulting picture as ataxia. As might, however, be expected on *a priori* grounds, the affection is apt to depart from the typical disease of the various columns. This is less noticeable in the case of spastic paraplegia, more noticeable in the case of ataxia, as witness the following :

N. M., æt. 49, married, a German, and a dealer by occupation. Family history good. Alcoholism, syphilis or excessive venery denied. No history of any serious or long-continued illness.

Nineteen years ago, while perfectly well, he was thrown from a wagon during a runaway, landing with the right side of his head against a curbstone and also badly bruising his body. He became unconscious, and remained so for eighteen hours. He was confined to bed for a week, partially recovered, and continued in indifferent health for some six months. During all of this time he suffered severely from headache. Finally he began decidedly to fail in general strength and to lose weight. This continued until a year after the accident, when he began to have severe stabbing pains in various parts of the body, notably in the arms and legs. About the same time he noticed that he would stagger while he walked, especially in the dark. These symp-

toms persisted and in the following year—now two years after the accident—he began in addition to have convulsions. These invariably came on at night, appeared to be general, and recurred four or five times a month, and persisted with a somewhat lessened frequency up to the present time. At times he would wake up after the attack was over ; at times he would continue sleeping, knowing nothing of the convulsion except from the statements of his wife. Frequently passed his urine during a seizure.



Posterior view showing lateral curvature and atrophy of left thigh.

The attack of pain in the arms and legs and over the trunk continued, though with somewhat lessened severity up to the present. The headache steadily persisted with little or no change in character. The unsteadiness in walking gradually increased until walking in the dark became very difficult, and even impossible.

Status Præsens.—Patient when standing sways considerably, and when eyes are closed will fall if not supported. Gait very ataxic. Knee-jerk absent on both sides. Sensation much delayed in both legs. Small patches of absolute anæsthesia about inner aspect of calves and

ankles. Sensation also slightly impaired over hands and forearms. Temperature sense preserved.

As patient stands, decided wasting of the left thigh is noted, and is confirmed by measurement; the circumference of the right thigh, at the junction of the middle and upper thirds, is 18.5 inches, while that of the left at the same level is but 17. A slight difference is also detected in the calves, the right measuring $13\frac{1}{4}$ and the left 13 inches. No difference is detected in the arms or forearms.

Marked scoliosis is also observed, the muscles of the back generally appearing to be weak and somewhat wasted, especially in the lower dorsal and lumbar regions, and more markedly upon the right side. This is well seen in the accompanying photographs. The trunk seen from behind is observed to curve markedly to the right, while viewed from the side it is also seen to sag very much forward.

Subjectively, the patient complains of great headache, which he refers to the site of the old head-injury. When carefully examined no decided irregularity or scar can be detected, though when compared with the opposite side, it appears a trifle flattened. It is further painful to pressure and percussion. Jabbing pains are still felt over arms and legs, though less than formerly. Patient has also a band-like feeling about the abdomen.

No pain is elicited by pressure or percussion over the spine nor by transmitted shock through the head or shoulders. No tenderness is detected over the nerve trunks.

The eyes were now examined. Both pupils are large and react promptly to light and accommodation. Both nerves somewhat gray. Fields for red and green somewhat contracted. A detailed examination by Dr. C. A. Oliver is here appended:

OPHTHALMIC EXAMINATION, SEPTEMBER 18TH, 1891.

BY CHARLES A. OLIVER.

Central vision for form in each eye normal. Accommodative range in each eye normal for age and refractive condition. Visual fields for red and green somewhat contracted in the left eye; the red field of this eye showing a *central* negative scotoma of about twelve degrees in diameter, extending to about ten degrees to the nasal side of the fixation point — a similar scotoma crescentic in shape of about five degrees in length being situated about two degrees to the nasal side of the fixation point in the red field

of the right eye. The area of green being about ten degrees concentrically smaller than the red field, gave negative fugitive scotoma, rapidly passing into positive fleeting ones at all and any portions of the fields. Pupils about three millimetres in horizontal meridians and irides freely mobile to light stimulus thrown binocularly and monocularly from all points of the visual field. (Curiously, the patient complained lately that "the light is too strong," he asserting that this has always been so.) Extra ocular muscle action, with the exception of a slight insufficiency of the interni, intact. Intraocular tension normal.



Lateral view showing weakness of back muscles and wasting of left thigh.

Ophthalmoscopically : No coarse changes in the choroid, retina and optic nerve, except a slight degeneration of the optic nerve tissue, more marked in the deeper layers and to the temporal side, this being more permanent in the left eye.

It will be noted from the above that the sides where we have the greatest anæsthesia for red correspond to the sides where the optic nerve degeneration is the most pronounced.

Further than this, the fleeting scotomata for green in all portions of the field show impairment of the entire transverse diameter of the nerve trunk to the finer and more difficult transmissions.

The above case is especially interesting because of its etiology. The man was, as already stated, in good health at the time of the accident, and there was no history of any nervous disease in his family. There can be no doubt both on these grounds and on the grounds of the subsequent history that there was a causal relation between the injury and the ataxia. It is impossible indeed to conclude otherwise.

That a slowly progressing degenerative lesion is here present must also be the case, but that it differs from the lesion of true locomotor ataxia, at least in the areas of the cord involved, is likewise evident, as witness the local muscular wastings. Secondly, the condition of the pupils is also a factor pointing in the same direction. The intense and constant headache bespeaks an organic cause again referrible to the trauma, while the associated epilepsy is very suggestive.

Why in one instance a trauma should result in a degeneration of the motor paths, and why in another of sensory tracts must remain a matter for speculation.

HEMIHYPERTROPHY.

Mobius (*Muenchner med. Wochenschrift*, 189, No. 44), reports the case of a boy fourteen years of age, whose parents were neurotic. The skull was symmetrical; the left cheek larger than the right. The left extremity in all parts were stouter and firmer than the right. Sensibility and reflexes were normal and equal upon both sides. The hypertrophy was looked upon as a pathological change. It is worthy of note that the vaso-motor disturbances of the skin were the greatest over those parts which were not hypertrophied.

W. M. L.

Neurological Digest.

CURRENT ANATOMY, PHYSIOLOGY AND PATHOLOGICAL ANATOMY OF THE NERVOUS SYSTEM.

BY JOSEPH COLLINS, M.D., NEW YORK.

ON PILO-MOTOR NERVES, BY LANGLEY AND SHERRINGTON.

The nerve fibres, stimulation of which causes contraction of the *erectores pilorum*, are designated by the authors as "pilo-motor" fibres on the analogy of "vaso-motor" fibres. These fibres are present probably in all animals in which horipilation takes place under the influence of intense emotions. Sherrington experimenting on monkeys finds that the pilo-motor nerves for the face and head pass from the spinal cord in the anterior roots of the third and fourth thoracic nerves principally, to the sympathetic chain, ascending the cervical sympathetic and becoming connected with the cells in the superior cervical ganglion. Stimulation of the sympathetic causes an erection of the hair on the same side of the forehead, front half of scalp, temple, cheek, and upper part of whisker, and on section of the sympathetic the hairs of these parts lie flatter than normal while the hair on the normal side becomes erect under the natural stimulus. The pilo-motor nerves for the lower extremity pass from the twelfth thoracic to first, second and third lumbar. Langley's investigations on cats lead him to believe that the pilo-motor nerves leave the spinal cord to run to the sympathetic chain on each anterior root from the fourth thoracic nerve to the third lumbar. The fibres from the third to the seventh thoracic inclusive ascend in the cervical sympathetic, become connected with the superior cervical ganglion and supply the hairs of the region between the ear and eye, skin on the back of the head and neck. The fibres from the other thoracic nerves supply the back and those from the lumbar as far as the third, supply the tail. Stimulation of the spinal nerve or sympathetic chain gives unilateral effects except in the tail, where they are bilateral. —"Journal of Physiology," 1891, Vol. xii., No. 3.

In the "Journal of Physiology," Vol. xii., No. 3, Dr. W. Hale White gives the results of his experiments on rabbits, in order to determine the areas, irritation of which will give rise to increase of temperature, a continuation of a former publication in the same journal, Vol. xi., No. 1. The conclusions he arrives at are as follows:

1. The normal rectal temperature of a rabbit is 101° F.—103° F.
2. Neither an anæsthetic nor an operation affects the temperature much, unless some special part of the brain is damaged.
3. Lesions of the corpus striatum, if not large enough to give rise to shock and hemorrhage, cause a considerable rise of temperature.
4. Lesions of the septum lucidum also cause a rise of temperature.
5. Lesions of the optic thalamus do not alter the temperature.
6. Lesions of the white matter around the corpus striatum and optic thalami do not cause a rise of temperature.
7. Lesions of the cerebellum do not alter the temperature.
8. Lesions of the anterior part of the upper surface of the cerebral cortex either do not alter the temperature or the alteration is very slight.
9. Lesions of the posterior part of the upper surface of the cerebral cortex may cause irregular rises of temperature, which are quickly produced and last only a short time. Sometimes there are several rises and falls after one operation.
10. Lesions of the crus cerebri cause a considerable rise of temperature.

He explains the rise of temperature that resulted after transverse section of the anterior part of the optic thalamus recorded by Ott. ("Therapeutic Gazette," Sept. 15, 1887), by showing that lesions of the anterior part of the thalamus must if at all extensive, result in injury to some part of the corpus striatum.

Dr. P. F. Spink in his inaugural dissertation (Jena, 1890) has given the results of some experiments made on rabbits with a view to determine the relations between the administration of alcohol and the development of multiple neuritis or of at least puerperal neuritis. He divided his rabbits into five lots, after first selecting one from each group as a control animal. Then alcohol was administered

through a tube passed into the stomach and with the food. Some of the rabbits took an immense quantity of alcohol extending over a period of three or four months before the phenomena began to present themselves, while others succumbed very rapidly and with a smaller quantity. During the time of the experiments symptoms of poisoning, as diminution of weight, stupor, weakness, tremor of the tongue and buccal mucous membrane, and often general tremor and a condition like delirium tremens was present. The corneal reflex disappeared before the ciliary. After death the experimenter paid little attention to the parts other than the peripheral nerves. In the nerves examined, such as to auricular, tibial, vagus, etc., the evidences of degeneration in the medullary sheaths, as is frequently seen and described, were found. In the axis cylinder, moreover, was found a condition which the author says is as yet unknown in the literature. The axis cylinders were wound spirally on their continuity, or corkscrew-like, and in some cases they were in knots. The author inclines to think that this condition is pathological.

ON THE TOPOGRAPHY OF THE NUCLEAR CHANGES IN AMYOTROPHIC LATERAL SCLEROSIS.

Dr. W. Muratoff (*Neurolog. Centralbl.*, No. 17, 1891). The author gives the results of his anatomical investigations in three cases of amyotrophic lateral sclerosis. The changes in the gray substance were atrophy of the principal nucleus of the hypoglossal and of the root of the hypoglossal. Roller's nucleus intact. The posterior nucleus of vagus somewhat atrophied. Nucleus ambiguus normal. Glosso-pharyngeal nucleus normal. Facial nucleus in one case distinctly atrophied, in the other two, very much less so. Atrophy of knee and fibres of the facial where it bends over the abducens nucleus. Abducens nucleus normal. In one case the motor nucleus of the trigeminus was somewhat atrophied. No change in the motor-oculi nucleus.

The changes in the white substance were sclerosis in the entire extent of the pyramids. Some degeneration at the ventral border of substantia nigra of Soemmering. The change in the posterior columns was not very distinctly marked but always present, particularly in the case that had such marked changes in the nucleus of the twelfth nerve. And in a case of the disease where the nucleus of the twelfth

was not affected, the posterior columns were found to be normal. The affection of the posterior bundle was in all three cases in entire accordance with the changes in the nuclei. The changes in the spinal cord were those ordinarily found. From his observations the writer believes the following conclusions are justifiable in regard to the anatomical changes in this disease.

1. The posterior bundle can, as the result of atrophy of the nuclei, become diseased. This is not a secondary degeneration, but a primary systemic affection.

2. In the posterior bundle are found short commissural fibres, the functions of which are unknown.

3. On developmental grounds and from pathologico-anatomical observations, there is a certain analogy between the ground bundle of the anterior column and the posterior longitudinal bundle.

4. Degeneration of the raphe and fillet.

A REMARK ON THE OUTER NUCLEUS OF THE FUNICULUS CUNEATUS.

By Dr. L. Blumenan (*Neurolog. Centralbl.*, No. 19, 1891). Further remarks are added by this writer to his previous paper in No. 8 of the same journal concerning the inner and outer nucleus of the funiculus cuneatus, the topography of the latter and its relations to the cerebellum. Obertheines, in the recent edition of his book, speaks of the outer nucleus of the funiculus cuneatus as an inconstant group of cells situated peripherally. Blumenan believes that the cells of this nucleus belong to the two types that have been differentiated by Golgi. The nerve processes of these cells, although giving off accessory fibres, do not lose their unity after going a long distance. The nerve processes disperse as a rule lateralwards toward the restiform body and the arcuate fibres which come from the lateral columns of the cerebellum. Others of these fibres can be followed to the lateral periphery of the medulla, where further relations cannot be absolutely made out. There are also cells that send these processes inward but frequently, however, after these have passed a shorter or longer distance, they turn and go toward the periphery.

The author mentions a case of deficient development of the cerebellum which he was permitted to examine in which only a small part of the hemispheres on both sides and a rudimentary nucleus on the right side were developed. The

inner nucleus of the funiculus cuneatus was well developed, the outer, however, showed a marked diminution of volume on both sides.

CRANIOMETRY AND ITS MOST RECENT INVESTIGATIONS.

By Prof. J. Kollman (*Correspondenzblatt der Deutschen Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, 1891, April, May and June). (Ref. in *Neurolog. Centralblatt*, No. 19, 1891). Kollmann devotes the first two parts of his paper to the criticism of the recent publications of Benedikt (*Kraniometrie und Kephalometrie*) and Von Török (*Grundzüge einer Systematischen Kranimetrie*, etc.) in their mathematico- and mechanico-physical bearings. It is very difficult in a short abstract to convey to the reader the essentials of Benedikt's work and especially more so that of Török's, where the five thousand angular and linear measurements are to be considered. The human skull has no absolute unchangeable form according to Benedikt's and Von Török's ideas. It is not built like a crystal but receives the impress of, that is, it is developed according to racial peculiarities and changes. The skull follows the law of relationship in the vertebrates. Morphology and biology show only the structure of the skull. The segmental nature of the skull can not be doubted any longer and it is not to be explained by way of mathematics and mechanics.

Kollman found among Europeans two entirely different forms of facial formation, countenance as it were, that are transferred from parent to offspring. The large and small form of countenance (*leptoprosop*) and the short and wide (*chamialprosop*). For each of these standard cases he has made a countenance index after the formula

$$\frac{\text{Breadth of zygomæ} \times 100.}{\text{Length of countenance.}}$$

Low forms are reckoned with an index below 90, and high above 90. With the long countenance are found high orbital sockets, small, long nose, small superior and inferior maxillary bones, small palate and narrow zygomatic arches. With the wide countenances are found low orbital cavities, short nose with wide apertures, broad and flat nasal bones, low superior maxillary, broad and wide palate, prominent cheek bones and outstanding zygomatic arches. However, in the broad as in the long countenance the anatomi-

cal foundations of the complicated configurations of the face vary in a reciprocal manner.

European people that were formerly looked upon from an anthropological and ethnological point of view as a racial unity (such as the Germans, English, French and Italians) do not belong throughout as a single type of race, but as a mixture of several races. To prove this fact there was at one time obtained the statistics of more than ten million school children concerning the color of the eyes, hair and skin. It showed that spread over Europe are two races, the blonde and the brunette, and these races have in the most intimate way intermingled one with the other, so that many mixed varieties have resulted. For instance, in Germany, 54 per cent.; Austria, 57 per cent.; Switzerland, 63 per cent. The Germans, Swiss and Austrians show not alone ethnical, but particular corporal differences although they are all derived from the blonde and brown varieties. The races and type from which they are sprung are everywhere the same. The racial anatomical delineations or impressions in the offspring are influenced by whichever element most thoroughly predominates in the progenitors. Somatic statistics and craniometry show the multiple forms of types that may be developed in one and the same nation. The Indian tribes of British Columbia show according to measurements of skulls made by Boas, two different varieties of head formation, in which the facial outlines and bodily height were in accordance with the variety of the skull. These people are also composed of two races which have mixed one with another without the formation of a blended race. The representatives of the race always remaining distinctly recognizable as in the European people. In the same manner Luschau showed that the Tachtadschy, a Grecian tribe in Syria, consists of two portions living beside one another who can be clearly distinguished in spite of their marital mixtures for thousands of years.

ON HYDROMYELUS AND SYRINGOMYELIA.

Von Dr. Karl Schaffer und Dr. Hugo Preisz, zu Budapest, mit zwei tafeln. (*Archiv. für Psychiatrie u. Nervenkrank.*, xxiii., Bund., pp. 1-39). The authors of this monograph have made a contribution of immense value to the pathology and causation of hydromyelus and syringomyelia. They have presented the histories of six cases suffering from either one of the affections or of both combined and

with commendable skill and patience give the results of these anatomical investigations.

By hydromyelus they understand the formation of cavities which passing from the central canal, have an epithelial covering as its substantial feature. It may be taken for a characteristic of hydromyelus that the bed of the abnormal cavity bespeaks the position of the central canal in its development—but this does not, however, hold true for all cases. The dilatation may issue from the embryonic central canal, and as this presents a slit, the cavity formed need not necessarily have a circular transverse section, neither must it have its usual seat at the central canal providing that the obliteration of the foetal slit has taken place somewhere near the centre.

Syringomyelia is defined as a longish, abnormal cavity of the spinal cord situated outside the central canal, having no epithelial lining. This may be congenital, or acquired through the degeneration of tissue. The difference between hydromyelus and syringomyelia is a morphological one and has two important characteristics. 1st. On the syringomyelitic cavity are no epithelium. 2d. The cavity of syringomyelia lays outside of the central canal and does not communicate with it. The genetic conditions of the two may be identical. The opinions of the authors differ considerably in regard to the question, "How cavities develop in the spinal cord?" and they therefore discuss the theories of other pathologists at some length—particularly Simon-Westphal's, Leyden's, Kronthal's, Langhan's and others, but it is not within the bounds of this abstract to present the ideas of those investigators here.

It is in all probability a fact that an inflammatory process may start in the central canal which gives rise to a formation of glia proliferation, and as the vascular supply is ordinarily affected, so a necrotic process takes place in local portions as in the subepithelial layer, and also the epithelial layer of the central canal. The canal subsequently widens in consequence of the necrosed and absorbed area, while the epithelium of the margin of the enlarged canal may continue to grow. This last fact is of highest importance.

The authors present the following schema referable to the formation of cavities in the cord.

I. Simple cavity formation.

1. Hydromyelus.

(a) congenital; (b) acquired.

2. Syringomyelia.

(a) congenital; (b) acquired.

II. Combined form of cavities.

Hydromyelus and syringomyelia (Variations: congenital and acquired hydromyelus with congenital and acquired syringomyelia).

III. Mixed form of cavities.

Hydro-syringomyelia with varieties as in division II.

By the combined form is understood an independent existence in the same cord of syringomyelia together with a congenital or acquired hydromyelus which at first does not communicate with the enlarged central canal but after a confluence between the two takes place, the name hydro-syringomyelia is given to it.

The authors make a critical application of the pathological conditions found in their cases to the above table. Any one specially interested in hydromyelus and syringomyelia should consult this ably written and lucidly explicated monograph.

RHUS AROMATICA IN THE TREATMENT OF INCONTINENCE OF URINE.

In the Buffalo "Medical and Surgical Journal" for October, 1891, Dr. Wm. C. Krauss, of Buffalo, sums up his experience in nine cases as follows:

Incontinentia urinæ, due to slight disorders of the genito-urinary or nervous systems, is amenable to the rhus treatment, and gives most favorable results.

Incontinentia urinæ, due to destructive lesions of the spinal cord, complicating the vesical centre or its reflex arc, is not amenable to the rhus treatment, and gives negative results.

W. C. K.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Holandish, Swedish, Danish, Norwegian, German, Portuguese, Roumanian, Spanish, and Italian:

F. H. PRITCHARD, M.D., Norwalk, Q.

From the Swedish, Danish, Norwegian and Finnish:

FREDERICK PETERSON, M.D., New York.

From the German:

WILLIAM M. LESZYNSKY, M.D., New York.

BELLE MACDONALD, M.D., New York

From the French:

L. FISKE BRYSON, M.D., New York.

G. M. HAMMOND, M.D., New York.

From the French, German and Italian:
JOHN WINTERS BRANNAN, M.D., New York.

From the Italian and Spanish:

WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:

E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:

ALBERT PICK, M.D., Boston, Mass.

From the English and American:

A. FREEMAN, M.D., New York.

From the French and German:

W. F. ROBINSON, M.D., Albany.

PATHOLOGICAL.

SULFONAL POISONING.

By DR. ERNST NEISSER.

Poisoning by large doses of sulfonal have been very rarely noticed. A laborer in Riedel's manufactory, wishing to get satisfactory sleep, took about three tablespoonfuls of sulfonal. Thereupon he slept four days and nights when he awakened. He slept one and a half days longer, and afterward was somewhat dizzy, without experiencing farther disagreeable consequences.

The present case is that of a fifteen year old healthy apprentice in a drug house, who was transferred from the surgical to the medical clinic, with the statement that he had poisoned himself with some unknown substance. He had a temperature of 96 degrees, and was profoundly unconscious; respiration easy and quiet; pulse 100, rather small, but regular. The patient's condition was not alarming, and he was treated during the night with warmth and excitants.

On the following morning the patient was quietly sleeping, the countenance slightly reddened, the mouth closed, the respiration quiet (18) and deep, pulse 96 and extremely

variable, reflexes uncertain, except that the corneal reflex was always distinct. The pupils, of medium dilatation, reacted variably to light, returning immediately to their former size.

The patient did not react to cries and shaking. Pricking of the face, hands and feet produced no effect, except a distinct widening of the pupil. Now and then languid jactitation occurred.

Salicylic acid and phenacetine were mentioned as possible causes of the condition, but the chloride of iron did not react upon the urine. Finally we learned that *two boxes* of 50 grammes each of sulfonal (over 3 ounces) were missing.

The patient now received (besides excitants and cold douches every two or three hours), rectal injections of 200 to 400 ccm. of lukewarm water (later, milk and wine also) in order to hasten the excretion of the substance by increasing diuresis. We were successful in keeping up a daily passage of about 1,000 ccm. of urine by patient, who always retained the repeated injections of small amounts of water, although he received nothing by the mouth. There was neither albumen nor sugar in the urine. Prof. Jaffe was able to detect sulfonal in it, excreted unchanged.

On the third and fourth days the patient slept soundly. He reacted better to irritants, but without awaking.

The temperature, which at his admission was 96 degrees, rose to 101.3 on the fourth day; fell to normal on the second day; rose to 100.8 two days later, and then fell to normal, where it remained. On the part of the lungs there was nothing pathological. The pulse had now become good and the respiration peaceful. No defecation.

On the fifth day the patient opened his eyes repeatedly, but was completely unconscious. The pupils were wide and reacted sluggishly. After a time languid answers came in response to energetic questioning. "What have you taken?" "Sulfonal." "How much?" "A hundred grammes." His speech was slow, and labored. He immediately fell asleep again.

On the sixth day he answered questions slowly but rationally, and took nourishment by the mouth. He imagined he was on a ship (Dizziness?) In the course of the day he could see everything. Ocular field normal. He could not stand nor walk without assistance.

On the palmar surface of both wrists there was an itching exanthema of numerous small, pale red papillæ as large as the head of a pin.

On the seventh day the patient was in full possession of consciousness, yet felt dull and dizzy, and remained in bed.

On the eighth day the exanthema had faded. The patient left the bed and was dismissed on the following day in perfect health.

It was substantiated that the patient had taken the whole contents of two boxes of finely-powdered sulfonal, of 50 grammes each, and that he washed down the largest part with considerable amounts of water. Thereupon he went into the open air and walked about three-quarters of an hour. He could give no account of himself after this time. After about six hours he was found unconscious, was made to vomit, and was brought into the clinic.

An extraordinarily large amount of sulfonal was absorbed, for the patient did not vomit until six hours after its ingestion, and after an unconsciousness of five hours. A part had, without doubt, already passed into the intestine. Furthermore, the patient had no movement of the bowels until the fifth day, and unchanged sulfonal was excreted in the urine.

The favorable outcome is to be explained by the slowness of the process of the absorption in the alimentary canal, caused by the difficult solubility of the sulfonal (according to Kast 1:200 in the gastric juice at the body temperature), and its rapid excretion by the urine. Hence the importance of free diuresis in such cases.

Finally, our case shows that sulfonal does not possess a cumulative action, provided that the secretion of urine continues to be sufficient.—(Med. Woch., May 21, 1891.)

UNILATERAL HYPERIDROSIS OF THE FACE AND ITS RELATION TO PATHOLOGICAL STATES OF THE FACIAL NERVE.

F. Windscheid publishes (*Gazzetta degli Ospitali*, No. 46, 1891) three cases of unilateral hyperidrosis of the face in which he was able to demonstrate pathological states of the facial nerve supplying the corresponding portion of the face. In a fourth case it was found due to irritation of the cervical sympathetic. The history of this latter is as follows:

A young man, twenty-nine years of age, complained of profuse sweating of the right side of his face, while the left did not sweat at all. The space affected extended from the roots of the hair down below the border of the lower

jaw, upon the neck. The skin of the right side of the face was warmer than that of the left ; the pupil of the left eye was dilated. The facial nerve presented nothing abnormal. The patient complained of violent pains in the right side of the forehead, and since a short time his hair has fallen out, more especially on the right side, and after a neuralgic attack. Along the course of the trigeminus there were small points painful to pressure. The histories of the patients with the facial nerve affected were as follows :

A working woman, twenty-five years of age, had suffered five weeks from facial paralysis, following a cold ; at the same time an abundant sweating of the left half of the face without the right side being affected. The entire facial nerve was implicated without taste or hearing being affected. The temperature and color of the skin were equal on both sides, while the left half of the face was covered with large drops of sweat. The left facial responded to both currents, but a greater intensity was required than with the right. The faradic excitability of the facial muscles was almost abolished on the left ; contractions followed sluggishly the galvanic current. The pupils were equal and normal in size. With regular electrical treatment the facial paralysis and hyperidrosis was cured in seven weeks. The second case, a male, was much like the first, except that the opposite side was affected, and there were alterations in taste on the right half of the tongue. It was treated by electricity irregularly without result.

The third case was that of a washer-woman, forty-five years of age, who presented hyperidrosis of the right side of the face. Six years before she had had facial paralysis, from which she, however, recovered, and remained up to six months ago. Since this time the slightest efforts produce profuse sweat of the right half of the face, with the left side remaining normal. Examination revealed the right side of face full of sweat pearls, the affected area extending from the roots of the hair down to the margin of the lower jaw, while in the median line it ended sharply and distinctly ; the skin was redder and warmer on the left than on the right. No trace of perspiration on the left side. The facial nerve functionated well on both sides, presenting, however, small fibrillary contractions of the muscle-fibres of the chin and upper lip on the right half. The electric excitability of the facial was diminished to the two currents, while the direct muscular excitability was equal and normal on both sides. The pupils were equal. The right cervical sympathetic was galvanized, powders of salicylic acid and chalk were used

locally, and atropin given internally without result. As the patient complained of great pain and formication in the right angle of the mouth, the hydrobromate of hyoscine was given internally and a 5 per cent. solution of menthol locally with some relief. The hyperidrosis continued, however. The physiological relation between the facial tract and sweating was demonstrated by Adamkiewicz. Pathological observations on the relations of the trigeminus with sweating are very rare.

F. H. P.

PATHOLOGY OF THE NERVE PLEXUSES OF THE INTESTINES.

Bouome : *Archivio delle Scienze Mediche*. The author, after an extended series of researches, comes to the following conclusions :

1. Extirpation of the colliac ganglion, with partial destruction of the solar plexus, produces constantly in rabbits atrophy of intra-intestinal nervous plexus, accompanied with profound atrophy of the liver and spleen and general marasmus.

2. Atrophy of the intestinal plexus and general marasmus are more pronounced when there develop neuromata and fibro-neuromata after the extirpation of the colliac plexus.

3. There exists no relation between the nutritive activity of the intestinal plexuses and the muscular tone of the intestines.

4. Obstructing the circulation in the intestines produces throughout the entire length of the intestine where such obstruction exists, a true necrobiosis of the plexuses of Meissner and Auerbach.

5. In cases of a chronic saturnism, the author observed complete degeneration of the plexuses of the intestine, accompanied with an advanced sclerosis of the semilunar ganglion and of the entire solar plexus.

6. In individuals with chronic catarrh of the intestines, the author observed simple and pigmented atrophy of the plexuses of Meissner and Auerbach.

W. C. K.

PARALYSIS FROM LIGHTNING

Dr. R. V. Limbeck, of Prague, read a paper upon this subject at a recent meeting of the Society of German Physicians of that city.

Lightning can cause paralysis in man and animals, either by laceration of the tissues and hæmorrhage, or by direct

lesion of the nervous and motor apparatus. Holding this view, Mr. Limbeck divides paralysis, due to lightning, into two classes, namely, the false or indirect (dependent upon hemorrhages) and the direct or true varieties. Two cases, which were observed by the speaker at Pribram's Clinic in Prague, corresponded to these types. One case (indirect paralysis) was that of a sixty-seven year old man, who, after being struck with lightning, presented a typical unilateral (right-sided) monoplegia, with motor aphasia. The second case (direct paralysis) was that of a fifty-three-year-old trackwalker, who, being struck by lightning, developed a motor and sensory paralysis of his left forearm and hand. The anæsthesia disappeared completely within three days, while the motor paralysis persisted for weeks. In addition to these, the patients presented symptoms which corresponded to the picture of a traumatic neurosis. Amongst these were: Circumscribed anæsthesia of the skin of both feet, bluish discoloration of the skin of both feet, with hyperidrosis, motor (functional) weakness of the right hand, no narrowing of the field of vision.

The writer divides the symptoms of true paralysis from lightning into two groups, namely, those which are directly due to the paralysis and those appearing in the later stages and belonging to a traumatic neurosis. The fact that in the first group of symptoms the sensory paralytic symptoms disappear chiefly more quickly than the motor, the speaker explained by stating that he thinks lightning to more effect the muscle in its function than the peripheral nerves.—(*Wiener medizinische Wochenschrift*, No. 28, 1891.)

F. H. P.

HYSTERICAL ANOREXIA AND ITS TREATMENT.

Follier, in a recent monograph on the above subject, distinguishes two forms—the one primary, the other secondary.

The primary form “enters into the category of the monosymptomatic manifestations of hysteria.” It is the most grave, the most tenacious, and also the most deceptive, for it may be, and it often is, the first manifestation of the hysteria, and is not accompanied by any clear stigmata of the disease. It is particularly in young girls that this form is met; and of all the alarming accidents of this neurosis, grave anorexia is unquestionably the worst, for it may end in death. What dominates in this affection is not so much the simple want of appetite as the systematic opposition to

taking any food at all. It comes on as a fixed idea, either suddenly or progressively, by a narrowing of the field of sensibility and intelligence, often accompanied by a sort of motor excitation which contributes to the exhaustion of the patient.

The secondary form comes on just like any other hysterical symptoms in young women of from twenty to thirty or more years of age. Maybe the only hysterical manifestation, or substitute itself for some other of the usual symptoms, and then take on as grave a form as primary anorexia. It is, however, in the immense majority of cases, less serious than the primary form. If, however, a patient is once cured, there is no guarantee against relapses, while primary anorexia once cured has never been known to return. The secondary form does not supervene by a fixed idea, and is but one of the multiple manifestations of a disease manifesting itself now by paralysis, now by contractures, now by aphonia, and now by anorexia. Hence, we often see it disappear after a convulsive attack, etc.

The causes which produce hysterical anorexia are the same in both forms. They are sometimes of moral order—the desire to become thin, to render one's self *interesting*, disgust of life from disappointments in love, etc. At other times, it is on account of the hysterical anæsthesia of the gustatory sense and of the stomach, or of nervous accidents due to dread, such as œsophageal spasm, gastralgia, by hyperæsthesia of the mucous membrane or of attacks provoked by the contact with the food of hysterogeneous points situated in some part of the gastro-intestinal tract.

In presence of a case of persistent hysterical anorexia, with obstinate systematic refusal to take food, and accompanied, it may be, with vomiting—certainly with commencing emaciation, the physician will not lose time by administering medicaments which are generally, if not always, inefficacious, nor by attempting gavage and electricity, which habitually give but temporary results, but he will apply himself immediately to an energetic and systematic moral treatment, of which one of the principal conditions shall be the complete isolation of the patient.

M. Sollier advises to send the patient to an establishment of hydrotherapy, where the treatment may be, at least at first, exclusively directed by the physician. The parents must be absolutely interdicted from seeing the patient, also everyone capable of favoring the patient's obstinacy in not eating. The patient is given for a nurse a stranger and one accustomed to this class of invalids.

As a general rule, the sick girl is not apprised beforehand that she is to be placed under isolation in a hospital. One element of success is the surprise which she experiences when she finds herself consigned to the care of strangers. The most prompt action is requisite. At the hour of the first meal, which follows the admission of the patient into the hospital, the physician warns her that henceforth she is absolutely in his power, and that she must eat whatever is given her. This said in a calm and firm tone of voice, the meal is brought in.

What kind of food is it best to administer forthwith? Should the physician take account of the duration of the anorexia, and work his way up generally to a full meal or should he choose a more radical course, and make the patient take an ordinary meal at the onset? M. Sollier does not hesitate to have recourse to the radical method. For the first meal, on which depends almost the success, and at all events the rapidity of the cure, he makes no concessions, either respecting the nature or quantity of the food to be eaten, for every concession will become a precedent which it will be necessary to combat later. An ordinary meal, consisting of soup, a plate of fresh meat, with vegetables and bread, a dessert, a little red wine, is what suits the best.

In acting thus from the onset and with energy, by means of the plain, uncompromising injunction, aided, if need be, by the sight of the stomach tube, the physician will almost always obtain a complete success, and will be surprised at the extraordinary tolerance for food which the stomach of these long-fasting girls exhibit.

In certain cases of hysterical anorexia, where beside the psychological element, one has to contend against the convulsive or spasmodic accidents determined by the contact of aliment, hypnotism may render great service. This mode of treatment, however, should be employed only as an adjuvant; it is not to be depended on as the main therapeutic agent. As M. Sollier says, hypnotism presents the same disadvantages as gavage or electricity, for it leaves the patient passive, and does not overcome her obstinacy. Hence hypnotism is of principal benefit in breaking up, by suggestion, the association which is established in the mind of the patient between the food and the accidents which its contact determines. When once one has succeeded during the hypnosis in making the patient eat, this occasion is put to profit by the physician on waking the patient, to show her that it was a simple, foolish notion for her to believe that the contact of aliments would always provoke spasm and

choking. This result obtained, there would be nothing to combat but the psychical element which would be treated in the same manner as if it was simple.

During the first few days of treatment, and till the return of the sensation of hunger, which is sooner restored in primary than in secondary anorexia, the physician will himself superintend the giving of every meal to the patient. He will long be on the alert to immediately ward off the tendency to relapses in secondary anorexia.

The moral treatment will be accompanied by a tonic treatment, by iron, nux vomica and hydrotherapy, the latter under the form of broken-jet douches at 12° C., administered in a ward whose temperature shall be kept at 25° C. The duration of the treatment will vary according to the cases, but as a general rule the patient should not be allowed too soon to leave the hospital, for fear of relapse. In these circumstances, it is the weight which is the best criterion. The patient should not be discharged till she has attained a weight nearly equal to that of ordinary health, or till after a progressive ascension, the weight shall have remained about stationary.

For this complaint heretofore described under the name hysterical anorexia, characterized, as we have seen, as much by refusal to eat as by loss of appetite, Sollier proposes the name *sitiergy*, but it would be a pity to encumber medical nomenclature with so barbarous a word. E. P. H.

A CASE OF TETANY.

The remarkable features in the present case (Deutsch. militärarztl. Zeitschrift, 1890, Hft. 11), reported by Scheller, are the sudden appearance of the disease, its occurrence in a blacksmith (Hoffmann having claimed that in this vocation there is a peculiar tendency to develop tetany), and the probability of its being due to interference with the healing power in a wound of the finger. The contractions occurred in the usual sequence in the upper and lower extremities, and extended to the abdominal and thoracic muscles, while the neck, face and pharyngeal muscles escaped. Trousseau's phenomenon was present. Weiss method of controlling the spasms by compression of the carotid was immediately successful, inasmuch as pressure upon this vessel produced contractures in the affected upper extremity with prodromal fibrillary tremors. The author emphasizes the fact that the effect, if carotid compression does not favor Trousseau's theory that the spasms are

caused by the anæmia resulting from the pressure. Pressure upon the nerve-trunk acted similarly, but not so distinctly. The electrical irritability was increased, both faradic and galvanic, as tested on the ulnar and perineal nerves. The mechanical irritability of the muscles and nerves was not increased. On the other hand the Romberg symptom was quite pronounced. Recovery took place as usual, in about six weeks, under purely expectant treatment.—(Centrabl. f. klin Med., No. 39, 1891.) W. M. L.

SEMI-LATERAL CEREBRAL PARALYSIS IN CHILDREN.

Dr. Freund and Rie, of Vienna, have published an extensive monograph upon this subject, based upon thirty-five cases of their own observation, and hereby furnish an interesting and valuable contribution to our knowledge of this disease. The literature is carefully considered and critically reviewed. The writers set forth several types of the clinical phenomena of this affection:

1. The numerous cases in which with violent initial symptoms, as convulsions, unconsciousness and fever, there develop paralysis with contractures, the so-called "spastic paresis," which latter may remain as such or combine with chorea in the course of the improvement of the symptoms.
2. Cases in which it gradually goes on to paralysis and spontaneous movements—choreatic paresis.
3. Mixed paresis.

The etiology and the various accompanying symptoms—epilepsy, trophic and sensory disturbances, as well as disturbances of intelligence—are considered. The writers regard the epilepsy and paralysis as symptoms of equal significance. First one and then the other may appear or exist alone during the patient's life, varying as the affection has its seat in the motor or other region of the brain. Meningitis, tumors and semi-lateral chorea minor, which is by no means rare, must be differentiated. The prognosis is unfavorable. Recovery is exceptional. Choreatic paresis has a more favorable prognosis, on account of the rareness of epilepsy and disturbances of the intelligence. No direct internal treatment is known. Symptomatically, electricity may be used for the paralysis, and the bromides for the epilepsy, and education in proper institutions on account of the defective intelligence and speech. Surgical intervention at the proper time would seem to offer more favorable prospects.

F. H. P.

CLINICAL.

STAB-WOUND OF THE SPINAL CORD.—A STUDY OF BROWN-SEQUARD PARALYSIS.

Neuman (Virchow's, Archiv., Bd. cxxii., Hft. 3), reports five carefully observed cases of wounds of the spinal cord at various levels, involving partly one-half of the cord and also the nerve roots. Only two cases corresponded with the genuine Brown-Sequard transverse hemisection. In one case oblique division was found affecting only one-half of the cord, although the marked hemorrhage at the point of injury and the level of the wound presented the picture of a complete transverse separation. A change in the muscular sense, after a long time, was demonstrable only in one case, confirming Erb's assumption of a non-decussating course of the corresponding nerve tract. Ataxia was present in one case shortly after the injury. In every instance the victims fell to the ground immediately, some becoming unconscious. The loss of blood was generally considerable. There was high fever in two cases, without suppuration, having occurred during the healing process. The writer believes this was due to the injury of the nerve centres. In one case there was remarkable warmth of the body twenty-four hours after death, although it was winter. Injury of the anterior horns or of the fibre tracts, immediately after their exit, was suggested in two cases, owing to the interference with the growth of the limbs, and especially a lack of development of the bones on the paralyzed side. In four cases the healing process progressed without complication, and in the course of time improvement took place without further treatment. In the opinion of the author, a cautious, galvanic or faradic treatment is indicated, and may prove of value after healing of the wound. The absence of secondary and neuritic degeneration essentially differentiates these incised and punctured wounds in their course and especially in their prognosis, from inflammatory and pressure lesions of the cord which present a similar appearance.—(Centralbl. f. klin. Med., No. 39, 1891.)

W. M. L.

TREPANATION OF THE CRANIUM FOR MOTOR APHASIA, WITH A SUCCESSFUL RESULT.

Dr. Gianfelice Fogliano, of Modena, Italy (Gazzetta degli Ospitali, No. 24, 1891), reports a successful trepanation for motor aphasia. The case, in short, is as follows:

G. P., twenty-one years of age, actor, had always been healthy up to his ninth year, when, running he fell and struck his head against the corner of a wall, receiving a deep wound of the left fronto-parietal region. Soon after, especially when angry, he noticed a difficulty in pronouncing certain words; especially was this noticeable in words beginning with *b* or *l*. This soon became so prominent that he was forced to substitute for these, words commencing with other letters. He obtained some improvement from electric treatment. His general health was excellent. In the left fronto-parietal region, near the outer extremity of the fronto-parietal suture, a semi-lunar cicatrix, 5 cm. long, was discovered, together with some depression of the skull and slight irregularity of surface. In speaking the patient often repeated the first syllables of some words, interrupted and hesitated, not knowing how to express the word representing his idea. He said that in his mind he could form the word exactly, but in order to pronounce it he must mentally repeat it several times. With the assistance of a suggester he speaks fluently. Variations of atmosphere had an influence upon his affection. He desired, at any cost, to be freed from his defect, which in his case—an actor's—was of serious importance. The cranial lesion itself being situated almost exactly over Broca's centre, trepanation was thought justifiable. A trephine with a diameter of two and a half centimetres was applied. The bony disc was found to be of irregular thickness, the dura was slightly adherent to the smooth inner table, which on being detached gave rise to some venous hæmorrhage. The disc was not replaced, as it did not exactly fit the opening after it was trimmed. The wound healed by first intention, and on the seventh day the patient left his bed. Already fourteen days after the operation the patient could speak with greater facility and regularity, which was quite evident to any one hearing him.

F. H. P.

A RARE NEUROSIS OF THE TONGUE AND BUCCAL CAVITY.

Bernhardt describes four cases, one male and three females, in which the patients complained of a prickling and burning of the mouth, and especially the tongue, which came on paroxysmally and would sometimes disturb sleep or prevent speech. It varied in intensity. These sensa-

tions in most cases were situated on the left margin of the tongue; but in two cases they extended to the mucous membrane of the mouth, upon the floor of the buccal cavity, the cheeks, gums and jaws. Nothing could be perceived in the fauces; only in one case did the membrane of the tongue present the appearance of folds and crevices. All the patients were over thirty years of age, and in good health. Examination revealed nothing abnormal. Two of the female patients wore false teeth, which must be taken into consideration. The fourth patient, a lady, had an excellent set of natural teeth. These abnormal sensations torment the patients exceedingly, and, above all, the fear of a "cancer" forced them all to seek medical aid, caused them several times a day carefully to examine their tongues in the mirror, and, in short, embittered their existence. These patients would be quiet for hours together, and did not impress as being hypochondriacs. This neurosis is by no means unknown in the French literature. Already in 1887 Fournier and Labbré, at a lecture given by Verneuil upon imaginary ulcers of the tongue, remarked that there were such patients, and that neuropathic individuals suffer from such a neurosis as frequently at least as rheumatic or gouty persons. The nervous disease of speech may be of grave importance, a premonitory symptom of tabes dorsalis or dementia paralytica which will follow. The writer, on the contrary, shows that the disease may exist alone and persist for years. Grave physiological disturbances, as of taste, movement or general sensation, were not present in his cases. Treatment in general is powerless. He used the bromides, cocaine locally, nitrate of silver, the thermo-cautery, iron, arsenic, but with only temporary benefit. More relief was obtained from electric treatment of the tongue and palate with the induced and constant current. (*Gazzetta Medica di Roma*, No. 15, 1891.)

F. H. P.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Meeting of October 15th, 1891.

The President, DR. A. L. LOOMIS, in the Chair.

THE MEDICAL AND SURGICAL TREATMENT OF EPILEPSY.

DR. B. SACHS read a paper on this subject, confining his remarks chiefly to the surgical aspect of the question. The query, "What can we expect from the surgical treatment of Epilepsy?" he would answer by presenting the views he was forced to hold regarding the nature of the disorder which we proposed to cure by this means, and by giving the results of his own experience in twelve cases of cerebral operations, nine of which were done for epilepsy. He wanted to remind his hearers that epilepsy was a symptom and not a disease. It was often merely one of a number of symptoms pointing to organic disease of the brain, to tumor, hemorrhage, abscess, or widespread meningitis and sclerosis. In other cases, it was the direct or remote effect of traumatic injuries to the skull or brain. In addition to these there were cases of genuine epilepsy. The author saw relatively fewer cases of this class than he did in former years. On closer examination he had not infrequently found that the epilepsy had taken its start from a long-forgotten injury or accident, that it was in its earlier days associated with paralysis, the paralysis having left but the slightest traces, while the epilepsy remained. It was not to be supposed that a true epilepsy, not meaning a single convulsive seizure, was a functional disease. In ignorance it might be called so, but with the improved methods of examining cortical tissue we should before long be able to demonstrate its anatomical substratum. Two French authors had been leading the way in this direction. They found in the case of congenital cerebral palsies, some slight lesion had been established during the intrauterine period; that this lesion might be lost sight of, but that the secondary degeneration following upon it was the cause of

the supposed hereditary epilepsy. This secondary sclerosis was the proof upon which the entire question turned. He reiterated that in cases of idiopathic epilepsy, the actual causal lesion had not yet been determined, that these cases had by common consent not been considered proper cases for operation. Jacksonian epilepsy, due to focal disease, whether of traumatic origin or not, were the cases to which operative interference had been directed. The focus of disease was present in these cases, as well as the secondary sclerosis. If years passed by before death ensued, the focal disease might be beyond recognition, but the secondary sclerosis had been demonstrated as being present. From these pathological conditions the inference could be drawn that there was a focal lesion, and a subsequent secondary sclerosis to deal with, it was therefore plain that the proper thing to do was to prevent the development of the secondary sclerosis if possible, or if it had been developed to neutralize its effects. The practical conclusions the author gives in regard to the foregoing remarks were these: (1) In a given case of traumatic or organic lesion, operate as early as possible to prevent the development of secondary sclerosis. (2) If operation had not been done at the onset, the epileptic seizure was a warning that secondary sclerosis had been established; by operating at this time further trouble might be avoided. (3) Excision of the diseased area was the only rational operation; if all other centres were not in an irritable condition, the operation might be thoroughly successful. If epilepsy could not be cured by this means, the patient's condition might be very materially improved by diminishing the number of attacks. The author purposely refrained entering upon the subject of operative interference in cases of tumor or abscess of the brain as the advisability of operating was governed by motives other than the cure of the epilepsy. Traumatic cases called for immediate surgical interference. Whenever the skull had sustained a severe or even moderate injury, a surgeon or the attending physician should do an exploratory operation to make sure that there was no depression of bone. As trepanation was not a very dangerous operation, it would be better to do this than to have the slightest doubt, for if neglected until epileptic symptoms appeared, might place the case beyond the possibility of surgical relief. After the epilepsy following traumatic injury of the skull or of the brain had been developed, there was still hope that the epilepsy might in a few instances be inhibited by surgical methods. For ages

past, trepanation had been the classical operation in these cases. Wherever depressed bone pressed upon any part of the cortex, or an old scar acted as a source of irritation, the removal of such was clearly indicated. In many cases, improvement, if not cure, of the condition followed. We must seek, however, an explanation for the improvement which followed trepanation in many cases of traumatic epilepsy of long standing, in which there was no old scar and no marked depression of bone. It was known that traumatic cysts were very frequent, and that this opening simply released the increased pressure due to the presence of the cyst. The author then gave a condensed history of several operative cases, some in which excision of cortical substance was performed. One of the serious features of the excision operation, and indeed of all cerebral operations, was the possibility that they might lead to the formation of cicatricial tissue in or around the cortex which might do more harm than the initial lesion. Yet from what the author had seen of the free pulsation of brains years after an operation, he believed that this danger from new cicatricial tissue to be quite slight. Granting the entire success to the operation in question, you had at best in many cases substituted a paralysis for an epilepsy.

Simple trepanation seemed to be more successful in the epilepsies associated with infantile cerebral palsies than in the traumatic forms, probably because of the greater frequency of cysts in these diseases than in the traumatic epilepsies. The early recognition of these troubles was of great importance; and the question naturally arose whether we could diagnose the lesion with sufficient accuracy to encourage the surgeon to operate at an early day before secondary degeneration was established. The author believed this would be possible in many cases, but the disease set in frequently at a very tender age, at which cerebral operations were but poorly tolerated; moreover, the epilepsy, although a probable sequel, was still a remote contingent; the paralysis represented the reality, and parents would be more apt to tell the physician to care for the present only; more particularly if looking to the future meant a possible increase of the paralysis. As soon as epileptic symptoms appeared the paralysis had the value of a focal symptom, the centres should be exposed, and if not removed they should at least be treated in accordance with the special indications of the case. In children excision of a centre was a less serious affair than in the adult, for in the former, other parts of the cortex were capable to

a greater degree of assuming the functions of the destroyed part. The author was confident that if these cases of infantile cerebral palsies were more generally recognized, and if we succeeded in checking the tendency to epilepsy in them, the total number of epileptics would be tolerably diminished. If the surgical treatment of epilepsy be of any value at all, it was in view of the foregoing, not to be restricted to the traumatic form.

Dr. C. L. DANA, in prefacing a brief consideration of the therapeutic possibilities in the treatment of epileptics, thought that a large proportion of these patients represented the expression of chronic degeneration. Idiopathic epilepsy was, in his opinion, symptomatic of a definite tendency to degeneration in a family or an individual. Such patients would be found to have certain physical, physiological and psychical characteristics by which might be traced the intensity of the degenerative processes. It was essential to make careful examinations of these patients for the purpose of ascertaining the extent to which these stigmata of degeneration were present. Just as these were in excess, so would the medical and surgical treatment be of little avail. On the one hand was the strongly marked degenerated epileptic who showed the evidences of inferior organization, on the other those forms of disease which seemed to be accidental or of extrinsic origin. We had also the reflex phenomena which could hardly be called epilepsy at all.

Contrary to a common impression, epileptics were not large and robust persons, but were, (1), below the average weight ; (2), the cranium was asymmetrical in 71 per cent. ; (3), there was a shortening of the parietal arc, sometimes of the frontal arc ; (4), the teeth were bad and badly placed in the jaws ; (5), the face was unequally innervated ; (6), differences existed in the color of the pupils and in the size and position of the pupillary orifice ; (7), astigmatism was found in three-fourths of the cases ; (8), the ear was deformed or badly placed ; (9), the crown of the scalp was out of position ; (10), the vital capacity was low ; (11), genital enormities were common ; (12), long fingers were common, webbed and supernumerary fingers rare ; (13), the left side was more developed.

In the treatment of idiopathic epilepsy, the first and primary rule was to take cases early and treat them vigorously from the start. Children who had a few convulsions during the first three to five years of life should be treated as if they might develop epilepsy between the ages of ten and sixteen. The recurrence of a fit between the age of five and

ten should excite apprehension and call for the most diligent treatment. Along with the evolution of epilepsy there was probably a progressive diffuse neuroglia sclerosis of the brain. Whether this was primary or secondary it was at least proper to use those measures which apparently affected this neuroglia proliferation. Nitrate of silver, arsenic and perhaps iodide of potassium were drugs which we believed affected this. Measures should also be used to increase vasomotor tone, strengthen and steady the circulation, for this purpose were the baths, douches and so forth. Nothing was more unfortunate than the enforced idleness of this class, some occupation ought to be prescribed. The next most important indication was diet, this should be non-irritating and easily digested.

As to the symptomatic drugs, the most valuable adjuvant to the bromides was hydrate of chloral, but he had found a new drug in chloralamide, which did all the good ascribed to the former drug; and did not affect the heart or circulation. All the bromides acted alike in this disease, except, perhaps, the bromide of gold and of camphor, in which the amount of bromism was small. The galvanic current through the brain and neck, given daily for a long time, would, in his opinion, yield all the results claimed for it by Dr. Rockwell, who had so strongly advocated its use.

Dr. J. A. WYETH said that the older he grew in surgical experience the more he recognized the value of coöperation between the medical and surgical branches of the profession. This was especially necessary when work on the brain was involved. He found himself at a loss to deal with these cases until he had consulted with his neurological friends to verify his diagnosis and assist him in fixing the *locus in quo* of the lesion. The speaker then gave the steps in the various operative methods for reaching the assumed local lesion, speaking strongly in favor of what is known as the trap door operation, by which a large area of the brain surface is exposed to exploration. The technical objection to this operation was the impossibility of securing bony union after closure of the parts. An instrument in course of completion would, he believed, render this possible. He thought there were many cases of epilepsy amenable to surgical methods, and he did not believe that the simple exposure of the brain could now be classed as a serious operation.

Dr. W. R. BIRDSALL did not agree with the last speaker about the danger of the operation, for they must remember that a good many patients did die as a direct result of the

surgery. In order not to bring operative work into discredit, cases should be carefully selected, and the earlier in the disease the work was done the better the chance of success.

DR. M. A. STARR thought that the cases for operation could be limited to those of traumatic epilepsy and where the brain lesion could be located. In ninety-nine cases out of a hundred the condition was not due to trauma, and we knew nothing as to its origin, or in what location to seek for the lesion. Some interesting work had lately been done which went to show that careful observation of the condition of the urine from day to day would demonstrate accurately the possible approach of attacks of migraine or epilepsy, and that by the proper use of acids and alkalies in the regulation of digestive and chemical processes, we might have a clue to means of preventing frequent occurrence of epileptic attacks.

DR. E. D. FISHER thought that operations could seldom be undertaken sufficiently early to prevent the sclerosis or descending degeneration at the site of the lesion. If this could be done at the age of two to four years, we might then give the brain a chance for the renewal of cell activity.

Dr. G. M. HAMMOND referred to several cases in which cure had been alleged to a severe mental shock. Much had also been claimed for hypnotism by the French writers. Personally, he was sceptical as to its power to cure any organic disease.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of November 3d, 1891.

The President, DR. L. CARTER GRAY, in the Chair.

A FEW REMARKS ON GENERAL PARESIS.

DR. WILLIAM AUSTIN MACY read a paper with this title. A question very frequently asked of the specialist in mental diseases was concerning chance of recovery in cases of general paresis. This brought up a subject of considerable interest, inasmuch as there had been great doubt expressed as to the cases of recovery, which were noted in the various records. Patients had been admitted from time to time in different asylums whose symptoms had, more or less, indicated the existence of general paresis, but following up their history, the symptoms were seen to gradually disappear, and

in many instances the patient finally was discharged as recovered. Again, these patients had been readmitted, and after going through the usual course of the disease, had ultimately died of general paresis. A large number of those first noted had been classed as cases of "Alcoholic Insanity," the name given to the particular type which the disease assumed, being determined by the nature of the case according as it was characterized by excitation, depression and so forth. So great an uncertainty had been felt by many alienists concerning the real form of mental disease in the cases just mentioned, that the name "Pseudo-Paresis" had crept into our nomenclature, as perhaps best expressing the only diagnosis the physician was willing to limit himself to. Practically the importance of diagnosing between the true and false cases of general paresis, if there be such, was less than it would at first appear. The treatment must necessarily be much the same, for we know from experience that many cases which might be classed as pseudo-paretics, when their history was imperfectly known, while there might be remission of the symptoms sufficiently to cause them to be so looked upon, after remaining for a longer or shorter time, showing this remission of symptoms, break down then and progress rapidly after the ordinary course of general paresis. The question naturally arose as to whether from different causes a condition was not often brought about in which the brain was attacked by a process which if it progressed would be recognised as general paresis, but which in this early stage was amenable to treatment and capable of being cured as far, at least, as causing the initial symptom to disappear.

There were reasons for thinking that there existed many cases of general paresis where the symptoms had disappeared under treatment and where the patients had lived for years of considerable usefulness. The fact that such close resemblance existed between symptoms in those who were called "pseudo-paretics" and those whose disease was unquestionably general paresis; that many of these pseudo-paretics lived for years under treatment in a comfortable, contented and fairly happy condition, and then broke down as soon as they were compelled to enter the struggle for existence again; that case where even the symptoms which characterize pseudo-paresis gradually disappeared until the patient was possibly discharged as recovered, often came again under observation, suffering from certain and rapidly developing symptoms of general paresis, all seemed to demonstrate that mental disease might exist if not checked by treatment; and were the patient to remain where he would

be constantly subjected to exciting causes the condition would prove to be only a stage of general paresis. Not so very long ago it was generally believed that all cases of general paresis terminated within a period not exceeding about two years. Now we found, with longer experience and more accurate knowledge, that there were many cases in which the disease had been under observation for six, eight and ten years, or even more. Many of these cases of long standing exhibited only such symptoms as characterized the pseudo-parietic, marked delusion only appearing at intervals, or it might be that, while showing many of the physical symptoms of general paresis, the case was characterized by dementia, which was the most prominent part of the mental trouble. It was sometimes very difficult to pronounce a satisfactory diagnosis in these chronic cases when previous history could not be readily obtained, just as it was unsatisfactory in the so-called cases of pseudo-paresis unless they were under observation for some time, but in taking up and examining both classes of cases, we could readily see how it was that in former years many were diagnosed as suffering from general paresis, where now searching the records, only a few of the physical symptoms of that disease could be found. Among such cases there must have been patients who might not have been parietics. It was somewhat questionable whether the combination of symptoms which led to the diagnosis of pseudo-paresis could be accurately set down in all instances to a process which, if it progressed rapidly, would end in general paresis, or whether they were symptoms which were common to certain forms of acute mania or melancholia with stupor or other disease without indicating paresis. As a rule the symptoms referred to were usually shown in cases in which, if classed under any other heading, would be considered as acute mania. It was well known that among parietics, as classified, there were those whose symptoms were primarily maniacal, melancholic or characterized by dementia, and that nearly all these cases ended in dementia if they lasted long enough. The speaker would call attention to those cases which, while showing manifest symptoms of mental disorder were somewhat difficult to classify; those to which the name pseudo-parietic was so often given. It was common to find the greater number of them, particularly where exciting causes operated during the later period of the disease, break down and progress to the termination with undoubted symptoms of general paresis. He would cite a case which had come under his own ob-

servation, in which during the later period of the disease the accuracy of the diagnosis was questioned. The patient was committed to the city asylum for the insane suffering from insanity, which at the time of his admission was apparently general paresis. He had remained under treatment for about a year, and had received constant supervision and care from his physicians. The symptoms which he had exhibited on admission had gradually subsided, until with the exception of a few physical symptoms and a not very well marked enfeeblement of mind, there was little to indicate the existence of any mental disease. The patient, through the ill-advised interference of a fellow patient, who had been discharged, was taken to court on a writ of habeas corpus, and the question of his sanity being inquired into, he was discharged as perfectly sane, notwithstanding the testimony given concerning his past condition. This man had remained at large some six months and was then re-committed, showing very marked exaggeration of his early symptoms, and had in two months died in paretic coma.

Dr. Dana had kindly called the speakers attention to the case of a female patient, who was admitted to the asylum for insane females on Blackwell's Island in 1886. She had at that time delusions of wealth and of her own personal grandeur and importance. She had occasional outbreaks of maniacal excitement. She was simple and childish in her answers, which were given with a hesitating and stammering speech and tremor of the tongue. For the past three years this patient had been only simple, her delusions having faded away until none could be obtained. The tremor of the tongue and the hesitating speech remained. She had been a good and willing worker in the asylum until rendered incapable by loss of memory and increasing dementia. Sometime ago the slight convulsions had occurred. Loss of sphincter control had not as yet taken place.

DR. E. D. FISHER, in commenting on Dr. Macy's paper, said that he recollected some few years ago, while seeing some cases with Drs. Beaver and Ferrier, of London, this question had come up. Dr. Beaver had said that a great many cases presented themselves in which the physical symptoms were pronounced enough, but in which the mental were absent or but slightly marked. These cases were, in that observer's opinion, usually due to syphilis or to alcohol. The progress of such was very much more protracted than in ordinary paresis, and the patients were subject to these so-called recoveries. Such recoveries were apt to be regarded as causes of general paresis. The speaker had heard

it broadly stated that syphilis was at the basis of all these cases of which they had been speaking, and would like to ask the opinion of the author of the paper. He would also like to know at what age these patients usually came under notice.

DR. MACY said that the average period was probably about forty, though a good many were sent to be taken care of earlier than that, and as young even as twenty-five. The duration of the disease varies a good deal, and was no doubt longer in proportion to the care taken of the patient. Cases similar to those he had mentioned might run for eight years, but where the symptoms were marked and the surroundings unfavorable, from one and a half to three years was about the limit. It did not seem to him that so many cases had their origin in syphilis as was generally thought to be the case.

ELECTRICAL INJURY FOLLOWED BY DELTOID PARALYSIS AND TRAUMATIC NEUROSES.

This was the title of a contribution by Dr. J. COLLINS. The case narrated was that of a man thirty-one years of age, whose occupation was that of a foreman of a gang of telephone and linemen. On September 23d, while standing on a telephone pole repairing a trunk wire, he had received a current from an improper insulated electric wire. The points of contact were on the inner side of the left leg and the left side of the neck and the man's estimate of the charge transmitted through his body was one thousand volts. The shock was followed by temporary loss of consciousness and he had then fallen a distance of twenty-five feet, striking a cart, and from thence to the ground. When seen by the speaker at the hospital, the patient's mental condition was clear and there were no particular evidences of shock. The man recovered from the contusions and burns in due course, and he was then tested for electric reactions about the arm and shoulder which had been the parts most injured. All reactions were found to be normal, except of the deltoid and teres minor. About this time the patient had begun to complain of numbness of the entire left side and of some loss of vision in the left eye. There was, however, no limitation in the visual field and no changes in the fundus. The sense of smell on the left side was complained of as deficient, as was also the sense of taste on the left side of the tongue. The thermal and muscular senses were somewhat impaired. The patient was nervous and easily frightened, believing that

something was going to happen to him. He also suffered from obstinate insomnia. Owing to the failure of all the tried therapeutic measures for the restoration of this patient, it was in sheer despair determined to try hypnotism. This was done on the assumption that the hysterical element entered largely into the train of symptoms. During the hypnotic state at the first séance the hysterical systems disappeared and the patient could hear a whisper in one ear as well as in the other. Salt placed on the left side of the tongue was quickly detected. Suggestion that he should sleep and feel better generally the next day was successful. Some months after an inability to raise the arm was treated the same way, the patient, while under the hypnosis, being able to respond slowly to the instruction that he should raise his arm. The séance was followed by improvement, and the man was now able to undertake certain duties once more.

It was probable that the injury which resulted in the train of symptoms was the traumatism received to the circumflex nerve when the patient fell on the cart. The speaker had merely given the facts in reference to the treatment for what they were worth. It should be remembered, however, that the time elapsing between the receipt of the injury and the recovery of the function of the nerve and muscles, was apparently shorter than that ordinarily given by the authorities on traumatic neuroses. Still it must also be borne in mind that the circumflex nerve was but short and not far distant from its ganglion, and that these facts, in conjunction with the reparative powers of the body, were in all probability of the greatest importance in determining the length of time of the recovery.

DR. C. L. DANA, in alluding to Dr. Collins' case, said that his impression of the patient's condition was that it was a result of the fall. He supposed that there was a possibility of such electric current as has been in use when this man was injured, producing a neuritis, but the speaker had been unable to find record of such a case. One case of polio-myelitis, stated to be due to the electric current, did not seem to bear out this assumption on examination of the history. There were cases due to a shock from lightning, but the tension and quantity was in such instance very different from that of the arc-lamp. He had seen a number of cases in which a condition of hysterical hemianæsthesia was produced by currents from these arc lights. He did not approve of inducing a severe form of hypnotism except in very rare cases, but thought that there was a class of cases in which

the minor forms might be employed with direct advantage. He had one case in which a condition of hysterical hemi-anæsthesia had resulted from a fright, the patient believing he had received the electric current. This case had been successfully treated by hypnotism and hydrotherapy, and speaker attached a good deal of importance to the water part of the treatment.

DR. W. R. BIRDSALL thought that in the case under consideration it was a point to bear in mind how very slight blows upon the shoulder were frequently the origin of atrophy of the deltoid.

AMERICAN NEUROLOGICAL ASSOCIATION.

Dr. WHARTON SINKLER, Pres.; Dr. G. M. HAMMOND, Sec.

*Seventeenth Annual Meeting, held at Washington, D. C.,
September 22, 23, and 24, 1891.*

(Continued.)

DOUBLE ATHETOSIS.

DR. WILLIAM OSLER, of Baltimore, read a paper on this subject, based upon fifty-three cases in literature and numerous personal observations. He mentioned incidentally that this condition is compatible with a high degree of intelligence, but is usually accompanied by mental deterioration.

LESIONS OF THE SUPERIOR TEMPORAL CON- VOLUTIONS ACCURATELY LOCATING THE AUDITORY CENTRE.

By CHARLES K. MILLS, M.D.

Although the localization of the auditory centre or sphere in the first or in the two upper temporal convolutions is generally admitted, this view has not received universal acceptance; therefore, the great value of the history and autopsy here recorded will be acknowledged.

The patient, a woman, aged 46 years, was admitted to the Philadelphia Hospital in August, 1891. She had a history of scarlet fever in childhood, of rheumatism many years ago, and also of old venereal disease. She had had five abortions

or miscarriages, and had one living child, 23 years of age, who was deaf and weakminded. For many years she had had valvular disease of the heart. She was right-handed. Some of the facts of her history were obtained from relatives who called to see her at the hospital, and others were procured after her death from a brother and sister-in-law, who were sought out and carefully interviewed.

Fifteen years before her death she had an apoplectic attack which left her word-deaf but not paralyzed. Prior to this first attack of apoplexy her hearing had been good, but after it she could not, by hearing, understand anything that was said to her. She could, however, hear music and sounds of various kinds; for instance, when an organ or band had performed upon the street she at times had called attention to the fact; and she had also come down from the second or even the third story to open the front door in answer to a knock. She could hear such sounds as a bell ringing and a clock ticking. These facts were elicited from her relatives through various statements made by them, chiefly spontaneously.

When anyone wished to communicate with her it was done by means of writing or signs, as she had fully preserved her vision and was evidently not word-blind either for writing or printing. She often read the newspapers, and could do so with intelligence up to a few weeks before her death. Her sister-in-law said that several times she had heard her try to read the newspaper aloud, and in so doing she had seemed to understand fully what she read, "but made a tangle of her words." From the time of the first attack she had never been able to speak well, her words becoming "jumbled" or "tangled." From the description given of her manner of speech the defect was evidently a serious form of paraphasia and paralexia.

Her relatives spoke positively of her deafness as having been due to the "stroke;" but the apoplectic attack, although it had at once caused this word-deafness and paraphasia, had not in any way, as far as could be ascertained, affected either motion or sensation. She could write, but "sometimes mixed up her words in writing."

Nine years before her death she had another and more severe apoplexy, after which her deafness increased for sounds as well as words until it was almost total. This seizure left her also with partial left hemiplegia, chiefly affecting the arm, and in this extremity, from the description, the paralysis was more marked below the elbow. Upon examination after admission to the hospital, she was found

to have some contracture at the metacarpo-phalangeal articulation.

Six weeks before her admission she began to have pain in the left side and abdomen, which gradually increased in severity. The day before her admission she had a chill and pain in the left shoulder and arm. For five weeks she had involuntary evacuations of urine, and for about two weeks she had been unable to retain her fæces. For these six weeks she had been much more helpless than previous to this time, often letting things drop from her hands. She seemed to suffer considerably from headache, and also slept badly.

She was first examined by me on August 24, 1891. Her condition then was one of almost complete helplessness. It was impossible to make her understand what was said to her, and so far as could be determined by repeated tests she was totally deaf; but notwithstanding her weakness, helplessness, and deafness, her face had a somewhat intelligent expression. She looked about her as if she knew what was going on. She was very emaciated; her heart's action was excited, and examination showed the presence of marked murmurs, both mitral and aortic. She became feebler day by day, and died August 28.

Autopsy.—No disease of the bone or of the dura mater was found. Even before pia-arachnoid of the left hemisphere was removed, it was noticeable that the first temporal convolution was much smaller and thinner than usual, and that at the posterior extremity of it and of the second temporal was a depression covering a space about seven-eighths of an inch in diameter.

The left first temporal convolution is remarkably small, narrow and smooth, except at its anterior extremity. Its posterior two-thirds or three-fourths have shrunk to a thin strip. At a point about the middle of the gyre, the convolution has so disappeared as to leave only a notch and shred of tissue. Just anterior to this point a small annectant gyre runs to the second temporal. The attenuated appearance of this superior temporal convolution is such as to attract attention of the most inexperienced observer of such appearances.

At a position marked, corresponding to the posterior fourth of the second temporal convolution and the parallel fissure, the brain presented a marked depression or cavity, at the bottom of which, when the specimen was in the fresh state, was a small mass of yellow, shrivelled, puckered tissue. This was evidently the remains of an old, embolic softening.

The subarachnoid cavity or cyst, which was present before the inner membranes were removed, was formed by this old necrosed area and the widened parallel fissure, this widening having chiefly resulted from the atrophying of the first temporal convolution.

In connection with the question of the part played by the second temporal convolution in cerebral audition, it is, of course, important to carefully describe the condition of this convolution. From the position of the annectant convolution seen in the figure backward it is decidedly atrophied, and in its posterior fourth, or perhaps third, it has practically disappeared, and has been replaced by the cavity or cyst just described.

The third, fourth and fifth temporal convolutions were undoubtedly not involved in either the softening or atrophy, as the brain was carefully studied by me in both directions, from the second temporal convolution to the hippocampal and the reverse.

Around the ascending branch of the Sylvian fissure and at the bases of the two central convolutions also, much atrophy had evidently also taken place. This ascending branch of the Sylvian, instead of being a mere indentation or narrow fissure as is usually the case, is wide and gaping. The hinder portion of the third frontal, and particularly the strip of convolution between the ascending Sylvian and pre-central fissure, is markedly wasted.

The retro-insular convolutions are two in number, and the posterior of the two is very small. The anterior retro-insular presents the appearance of being a continuation of the anterior half of the first temporal, and the posterior retro-insular is continuous with the posterior much-shrunken half of the first temporal.

In the right hemisphere is an old and very extensive hemorrhagic cyst, which, as shown by the specimen and the photograph, has completely destroyed the first, and almost completely the second, temporal gyre, the island of Reil, retro-insular gyres, the lower extremities of the central gyres, and a large extent—but exactly how much could not be determined—of the ganglia and capsules. Examination from within showed that the caudate body and the thalamus had largely preserved their integrity, and the chief interior destruction was probably of the lenticular ganglion and the external capsule. In the posterior portion of the cystic area, some gyal substance is seen, but examination shows this to be the sunken-in lower extremity of the inferior parietal convolution. As on the other side, the supra-Sylvian

bordering convolutions are much atrophied. The auditory nerves were atrophied. The acoustic striæ, usually so easily seen, and often so prominent, could not be made out with the naked eye.

Slight adhesions of the left pleura were present on both sides. The lungs were œdematous and exuded a turbulent fluid on pressure. The pericardial sac contained an ounce and a half of fluid. The endocardium was thickened. The mitral valve was also much thickened, the orifice being so small that it would not admit the little finger. The aortic valves were in a similar but worse condition, and a clot was found in the left auricle resembling in appearance those seen in aneurisms. The spleen was small. The kidneys were small and presented on their surface large hemorrhagic spots. On section the surface was found to be flabby, and the cortex and pyramids much distorted. The spots on the surface had irregular shapes, having the appearance of old and recent hemorrhagic infarcts. The liver was small and moderately firm. The ovaries were dense and sclerotic.

A study of this case justifies the following conclusions :

(1) The centre for word-hearing is situated in the hinder thirds of the first and second temporal convolutions ; its exact position is in a line with, or just in front of, the posterior extremity of the horizontal branch of the fissure of Sylvius. Possibly it is restricted to the second temporal convolution.

(2) The third, fourth and fifth temporal convolutions take no part in cerebral audition.

(3) A lesion confined to the posterior thirds of the first and second temporal convolutions of the left hemisphere will produce complete, or almost complete, word-deafness, the corresponding regions of the other hemisphere remaining intact.

(4) The field or sphere for all auditory memories covers a much larger cortical area than that for word-hearing, including at least the posterior two-thirds of the first and second temporal convolutions.

(5) The auditory field and special auditory centres have their highest development in the left hemisphere, but destruction of the auditory areas of the two upper temporal convolutions of both hemispheres is necessary to complete brain deafness.

(6) A lesion limited to the centre for word-hearing and causing word-deafness will cause also paraphasia in attempts at speaking, and paralexia in attempts at reading.

(7) An isolated lesion of the centre for word-hearing, producing absolute, or nearly absolute, word-deafness, does not necessarily cause inability to recall words by other means, as, for instance, through their visual signs; in such cases probably the meaning of the word is understood, although the name cannot be properly verified in consciousness.

(8) A cerebral lesion or lesions causing word-deafness will, in time, lead to secondary atrophy of the speech and oro-lingual centres on the motor or emissive side of the brain, and also to atrophy of the association tracts between the sensory and motor-hearing-speech centres.

(9) The retro-insular convolutions are anatomically and functionally closely related with subdivisions of the first temporal convolution, the most posterior of these retro-insular convolutions being continuous with the posterior half or two-thirds of the first temporal convolution.

Subcortical Hemorrhagic Cyst Beneath the Arm and Leg Arcas.—DR. MILLS reported another case with the above title. (See page 803.)

Autopsy on a Case of Athetoid Spasm Myotonia, and Diffuse Bilateral Disturbances of Sensation; Chronic Convexity Meningitis of both Hemispheres with Cortical and Subcortical Softening; Lesions being most marked in the Posterior Parietal Region.—The same writer reported an additional case with the above title. (See page 794.)

TUMOR OF THE MID-BRAIN AND LEFT OPTIC THALAMUS.

DR. JAMES H. LLOYD, of Philadelphia, reported the case and exhibited the specimen from a patient twenty-eight years of age, who had been admitted to the Philadelphia Hospital. There was a crossed paralysis, the left third nerve being involved, with right brachial monoplegia and right crural monoparesis. The face and tongue were not paralyzed on either side. No paralysis of any other cranial nerve. Death took place on the twentieth day after admission. The autopsy revealed a tumor of the left optic thalamus and the mid-brain, involving the left cerebral peduncle. On microscopical investigation this was found to be a glioma. A diagnosis of tumor of the left cerebral peduncle had been made at the first examination.

DR. F. X. DERCUM said that the sensory features in Dr. Mills' cases would prove an interesting study.

DR. J. J. PUTNAM referred to the autopsy, in which no lesion could be found, in the case of a child with double athetosis. In a case of hemichorea there was a distinct spot of softening in the tegmentum on one side. In another patient with locomotor ataxia and no impairment of intelligence, there was a linear subcortical hemorrhage, in the subcortical area below the paracentral lobule. Secondary degeneration had occurred in the cord. He also spoke of a case of sensory aphasia that was operated upon, with the result of finding a cyst occupying the left temporal lobe.

DR. L. C. GRAY mentioned the case of a man with hemiplegia and impairment of the muscular sense, in whom nothing could be discovered on operation. Death took place on the following day. The autopsy revealed a round-cell sarcoma with cystic degeneration in its centre, at the junction of the arm and leg centres. This was situated in the sub-cortex. There was also a sarcoma of the thigh.

DR. MILLS asked if the paralysis was spastic.

DR. GRAY replied that it was not, but he thought that spastic symptoms generally occurred where the lesion was near the basal ganglia.

DR. C. L. DANA cited the case of a man aged forty-six, who had syphilis ten years before. There were headache, left hemi-convulsions and coma. He recovered with left hemiplegia and left hemianæsthesia. The autopsy showed a gumma of the dura over the right central convolutions. In another case of a man aged fifty-five, with progressive right hemiplegia, and some loss of sensibility on the same side, there was a tumor about the size of a hen's egg in the middle of the left precentral convolution. He also narrated the histories he had collected of several cases of similar character, showing localization of sensory centres. He held the view that the cutaneous sensations must have their representation in the brain cortex, and had a larger and more diffuse representation than the motor. When one side was affected, compensation would take place from the other side to a greater extent than in motion or other sensations. He claimed that there is no evidence to prove the contrary. Dr. Mills' claim that the centre for cutaneous sensation is in the parietal lobe was at variance with all clinical facts.

DR. KNAPP reported the autopsy of a case of cerebral infantile paralysis with hemiathetosis. The child had hydrocephalus and tubercular basilar meningitis. The microscopic examination of the cord was negative, but the specimen was

not a good one, and the result of the examination was therefore uncertain. He believed that the auditory centres were in the temporal lobe, and he regarded Dr. Mills' case as one of the most conclusive yet reported. It is probable that each temporal lobe contains representations for both ears, and hence we cannot determine accurately the auditory centre, until we have methods of testing the hearing as complete as those we have for testing the vision. The rare cases of bilateral lesion of the temporal lobes are therefore the only ones which give us any definite information as to the auditory centres in man. His views as to sensory representation in the cortex agreed with those of Dr. Dana. Cases undoubtedly occurred where there was lesion in the Rolandic region without sensory disturbance, but cases had also occurred of lesion in that region without motor disturbance, notably a case of tumor, reported by Bramwell. He had reported a striking case of lesion in the ascending parietal, with sensory disturbance, at the last meeting of the Association, but Dr. Mills did not accept it as conclusive. In that case, as in a case of tumor of Rolandic region, there was no autopsy to determine absolutely the seat of the injury. Ferrier denied that the visual centre was in the cuneus, and Schaefer that the auditory centre was in the temporal lobe, and they both denied that the sensory centres were in the Rolandic region; yet Dr. Mill's case had anæsthesia without lesion of Ferrier's sensory centre in the gyrus fornicatus. He agreed with Dr. Dana that tactile sensibility was more fully represented back of the fissure of Rolando than in front of it.

DR. J. W. PUTNAM spoke of a case where, shortly after the removal of nasal polypi, there was gradual loss of memory, and at the eighth day, owing to the absence of sensory or motor disturbance, the diagnosis was made of abscess of the left frontal lobe. Trephining was done, and three ounces of pus removed from the frontal lobe. At the autopsy there was found an abscess of the corresponding frontal lobe. In another case with spastic condition of all four extremities, there was a glioma at the base, pushing the medulla to one side. In a child with athetosis involving the head as well as all the extremities, he found apparent absence of the bridge of the corpus callosum, and an abscess in the apex of each temporal lobe. The case had been diagnosed by a good observer as absence or defect of the cerebellum.

DR. MILLS said he had seen a case where tactile sensibility was lost in the hand, after loss of brain-substance from

the Rolandic region. This was the result of a fractured skull. He thought it would be difficult to locate the cortical areas in the negro by the same measurements in general use.

DR. J. J. PUTNAM referred to a case where the accidental removal of part of the central convolution occurred during operation, and was followed by sensory disturbance.

DR. BREMER said that he had seen a case in which an attempt was made to excise the wrist centre on the right side for focal epilepsy. Neither paralysis nor other symptoms followed the operation. He considered the question unsettled as to cortical motor and sensory areas. In the presence of spastic symptoms the question is not so much as to the location of the lesion in the subcortex, but the character of the tumor. The varying amount of blood-supply in a hemorrhagic cyst, probably gives rise to spastic symptoms.

DR. MILLS, in closing the discussion, said we are not yet in a position to settle this matter of sensory localization. He thought his case was not conclusive. His view is not of Ferrier, Horsley, or Munk, but that we have a great sensory lobe, not the gyrus fornicatus or the hippocampal region, but an anatomically demarcated lobe, which may include the gyrus fornicatus, hippocampal convolution, quadrate and posterior parietal lobule. In these regions are subdivisions of this sensory lobe, corresponding to subcutaneous muscular groups. Dr. Dana admits that in the cortex sensation has more representation than motion. This suggests one argument in settlement. Dana's cases must be satisfactorily explained. He could give many cases to Dana's one case, in substantiation of his view. There must be a sensory-motor association tract as well as a sensory-motor audition tract; cerebral paræsthesia comparable with paraphasia and paralexia. The convincing cases will be the bilateral. If this be true, then Dana has nothing to substantiate his claim. He suggested that sensation can be inhibited, as illustrated by hypnotism. Possibly we may explain the sensory symptoms by inhibition by tumor in the motor region of the adjacent sensory region. He claimed that operative cases showed no objective sensory symptoms after the removal of large portions of the motor cortex. He was surprised to hear it said that men who supported sensory localization did not support the correct views as to the centre for audition. As to myotonia and athetoid movements in his case, he was confident that there was no lesion in the capsule and no softening anterior to the retro-central fissure.

THOMSEN'S DISEASE.

DR. WALTON then read a paper describing a typical case of Thomsen's disease.

The patient was a man of twenty-eight, who had suffered from the rigidity peculiar to this disease from infancy. As a boy his movements were clumsy and slow, although he could endure fatigue as well as any when once the muscles were brought into play. His condition has been at a standstill since he was fifteen. On rising it is difficult to set the limbs in motion, and the gait is at first stiff and waddling, somewhat as if he were drawing his feet from the mud. Once under way he can walk many miles rapidly and without fatigue. All muscles are similarly affected, including those of deglutition, and the eyelids, which he finds it hard to drop after looking up. Individual movements are fairly strong. The muscles are large and firm. The position in standing resembles that of pseudo-muscular hypertrophy (photograph shown), this disease is, however, excluded by the course of the case, and by the strength of the muscles whenever brought into use. There is increased mechanical irritability, and the faradic current produces tonus. The characteristic reaction to the galvanic current could not be obtained, the responses being normal to both strong and weak currents. There was no further family history beyond a marked neurotic taint, and the fact that the father had suffered similarly, but in very light degree, in early life.

A case of Eulenburg's paramyotonia which had recently come under the writer's observation was reported briefly to show the similarity and difference between the two conditions. The case was that of a gentleman sixty-seven years of age, who was subject to tonic spasm, affecting principally the abdomen and lower extremities, coming on after exercise, lasting from a quarter to half an hour. On continuance of exercise the spasm reappears, after which the patient can continue without trouble. The difficulty is congenital, and was present in a younger brother and a daughter.

Both diseases are due to congenital defect in the muscular apparatus, perhaps also in the central nervous system, and are probably little affected, if at all, by treatment.

DR. ANGELL, of Rochester, read the history of two similar cases. See page 807.

DR. HUGHES maintained that Thomsen's disease is an affection of the muscular system, and doubted the entity of

such a disease. Thinks it a peculiar form of symptomatic condition. It differs from every kind of spasm with which we are familiar.

THE ELECTRO-PHYSIOLOGY OF REFLEXES, WITH THE DESCRIPTION OF A HITHERTO UNKNOWN LOCALIZED PHYSIOLOGICAL RE- FLEX PHENOMENON.

DR. GEORGE W. JACOBY read a paper on this subject (accompanied by a demonstration), in which he said that our knowledge of reflexes produced by electrical excitation is still in its infancy, and an electro-physiology of reflexes does not yet exist. The reasons assigned for this lack of knowledge are the necessity of employing very strong currents, and the difficulty of deciding whether contractions thus produced are reflex or not; these reasons he considers entirely invalid. After numerous experiments he discovered a reflex, produced by the application of the negative pole of a galvanic battery to the radial side of the forearm, which consisted in a contraction of muscles of the chin.

Examination of two hundred persons showed that the reflex was present in over seventy per cent. of normal individuals. The experiments were conducted by placing a large Erb electrode over the back of the hand and then making closure of the current with a small electrode attached to an interrupting handle. All such experiments upon the human body have heretofore been entirely dependent upon the statements and feelings of the patient. These unreliable factors can now be eliminated by utilizing the reflex described, as hereby we have a visible proof of the sensory reaction. Jacoby does not doubt that, attention having now been called to this reflex, other reflexes of a similar nature may be found in various parts of the body, and that we will by their examination obtain knowledge not only in regard to the pathological changes in sensory nerves, but also in regard to changes in that part of the cord upon whose integrity the excitation of such reflexes depends.

SUPPLEMENTAL TREATMENT OF THE PAR- ALYSIS OF ACUTE ANTERIOR POLIO-MYE- LITIS.

DR. V. P. GIBNEY read a paper on this subject, and said that a palsied muscle, or a group of palsied muscles, is often

very much handicapped by contracted tendons or muscles on the opposite side of the limb. Because of these contractures local treatment is often inefficient. However efficient the galvanic or the faradic current, or even massage, may be, if the muscle is overstretched the efficiency is certainly minimized. Another point was this, that a palsied muscle, or a group of palsied muscles, responds better to local treatment after a period of rest, or at least after being retained for a long time in normal position. In this connection he reported the histories in six cases. He advocated the correction of deformity, the removal of tension from a weakened muscle, the replacement of the joint surfaces to normal apposition, and the assistance generally given to a limb, the muscles of which are weak and palsied.

INTRA-CRANIAL SYPHILIS.

DR. LANDON CARTER GRAY read a paper upon the diagnosis of a certain form of intra-cranial syphilis, giving the histories of a number of cases in support of his views. These symptoms were a cephalalgia that is quasi-periodical, recurring generally at night, occasionally in the afternoon or in the morning, with marked insomnia; this cephalalgia and insomnia ceasing suddenly upon the supervention of any paralytic symptoms. Dr. Gray also called attention to the fact that a hemiplegia occurring in an individual under middle age should render us very suspicious of a syphilitic causation. This peculiar headache and insomnia belonged to the early stage of intra-cranial syphilis, although it might occur in the primary, secondary, or tertiary state of the general syphilitic infection.

DR. MILLS said that the occurrence of paralysis after the subsidence of headache and insomnia was an old observation but not for that reason an unimportant feature in the diagnosis or treatment of syphilis. These symptoms occurred in consequence of degenerative changes.

DR. J. J. PUTNAM agreed with Dr. Mills, and mentioned three cases illustrating the supervention of paralysis on the cessation of headache and insomnia. He believed that anæmia or arterial congestion gave rise to the former condition, thus rendering the patient less sensitive to pain.

DR. HUGHES said that the persistency of the headache was of more significance than its periodicity.

SEVEN RECENT CASES OF BRAIN SURGERY.

DR. WILLIAM A. HAMMOND presented the history of seven cases in which he had operated for the relief of epilepsy or paralysis, and said that the cases were of somewhat different character, for not only was the seat of a real or supposed injury a factor in determining where to operate, but the symptoms, their nature and location, were even of more importance in deciding upon the situation of the disease, the consequent point on the skull with which it was in relation and the extent to which the operation should be carried.

TUBERCULAR INFECTION OF THE CENTRAL NERVOUS SYSTEM.

DR. B. SACHS read a paper with this title. In the two cases serving as a basis for the paper, the patients had been received into the "Montefiore Home" for a non-tubercular disease of the central nervous system. In the one case, a large hemorrhagic cyst in the cortex was the residue of the process, giving rise to an infantile spastic hemiplegia in the vicinity of this cyst. Soon after admission to the "Home," where there were many patients with phthisis, a solitary tubercle of enormous size was developed, which led to a rapidly fatal termination.

In the second case, a tubercular infection hastened the course of an old chronic myelitis. The history of this case is about as follows:

J. R—, a Russian, aged sixty; family history entirely negative; well until two years and a half ago; then, after an exposure to cold, noticed a weakness of both legs; greater in the left than the right; this paresis gradually increased, associated with slight vesical symptoms. No change in symptoms for some months; then quite suddenly, about five months after his exposure to the phthisical contagion, he became absolutely paraplegic, and the reflexes of the lower extremities increased; bladder symptoms and bedsores are developed, the paralysis extends upward, first to the right arm and then to the left; anaesthesia as far as navel from below upward, and gradually extending to the lower margin of the second rib; patient has high fever, becomes rapidly emaciated, and dies about three weeks after onset of the absolute paraplegia.

Post-mortem examination: Entire absence of brain lesions, no tubercular meningitis anywhere; but the most

widespread destruction of the cord from the second to the twelfth dorsal segments, with ascending and descending degenerations. In the mass of destroyed tissues the tubercle bacilli were found in large numbers.

Dr. Sachs insists on the fact that the preceding disease of the cord furnished an excellent soil for the growth of the bacilli, and instead of growing in the lung tissues, or even in the meninges, they have grown upon the diseased substance of the cord itself. It is proper, therefore, to speak of a tubercular invasion.

DR. HUGHES referred to the unusually rapid termination of these cases with tubercular infection.

LEAD-POISONING, WITH SPECIAL REFERENCE TO THE SPINAL CORD AND TO PERIPHERAL NERVE-LESIONS.

DR. E. D. FISHER read a paper on the above subject and gave the following report: A. E., æt. thirty-four, painter; patient first seen June, 1890; gave history of an attack of lead colic with some weakness of the hands thirteen years previous, followed two years later by a second attack; from that time on several mild attacks; continued, however, at his work until he was unable to hold his brush; March, 1890, had an epileptic seizure, losing consciousness.

Present condition: Patient anæmic; complains of weakness of forearms and hands; no sensory disturbance; examination showed marked atrophy of the muscles of the forearms and of the hands, the latter presenting the appearance of progressive muscular atrophy; slight loss of sensation to temperature, pain and touch.

Electrical examination: Loss of faradic excitability in the interossei muscles and the opponens pollicis; extensors of the forearm give slight response; the supinators were unaffected; no reaction of degeneration; heart hypertrophied; high tension of radial artery; urine: sp. gr. 1008; albumen.

Ophthalmoscopic examination: R. E. $\frac{2.0}{3.0}$; L. E. $\frac{2.0}{1.0}$; R. E. exudative neuro-retinitis; L. E. atrophy of optic nerve and retina with occlusion of some of the vessels; suspected degenerative nephritis.

Patient died March, 1891, from advanced Bright's disease.

Autopsy: Heart hypertrophied; lungs normal; kidneys seat of interstitial nephritis; arteries of the brain atheromatous.

Microscopical examination of the cord and muscular spinal nerve showed the following results :

The peripheral nerve markedly degenerated. There was atrophy of the anterior horn on one side and sclerosis of the antero-lateral column of that side. In certain levels there was sclerosis of the column of Goll, and in Lissauers zone there was increased connective tissue, with thickening of the meninges and the walls of the vessels.

This case, with others, that have been reported would seem to prove that the various toxic agents affect the central nervous system as well as the peripheral. Indeed, we may have them individually involved, or in combination, or again simultaneously. The affection is usually a diffuse one, not limiting itself to the special sensory or motor tracts as in the so-called systemic diseases, but involving in different areas all the columns of the cord.

DR. DANA had seen the specimens, but was unwilling to say the lesions were due to lead. Lead seems to possess a selective action for the peripheral nerves. He thought the changes more marked in the nerves than in the cord.

DR. RIGGS, of St. Paul, believed with Dr. Dana that lead usually affected the peripheral nerves, but in this case he thought the lesion was more likely due to arterial sclerosis.

DR. LLOYD then showed microscopic sections from a case of lead-poisoning that had developed locomotor ataxy.

DR. DANA presented, in behalf of Dr. Joseph Collins, two new methods of Weigert for staining specimens.

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